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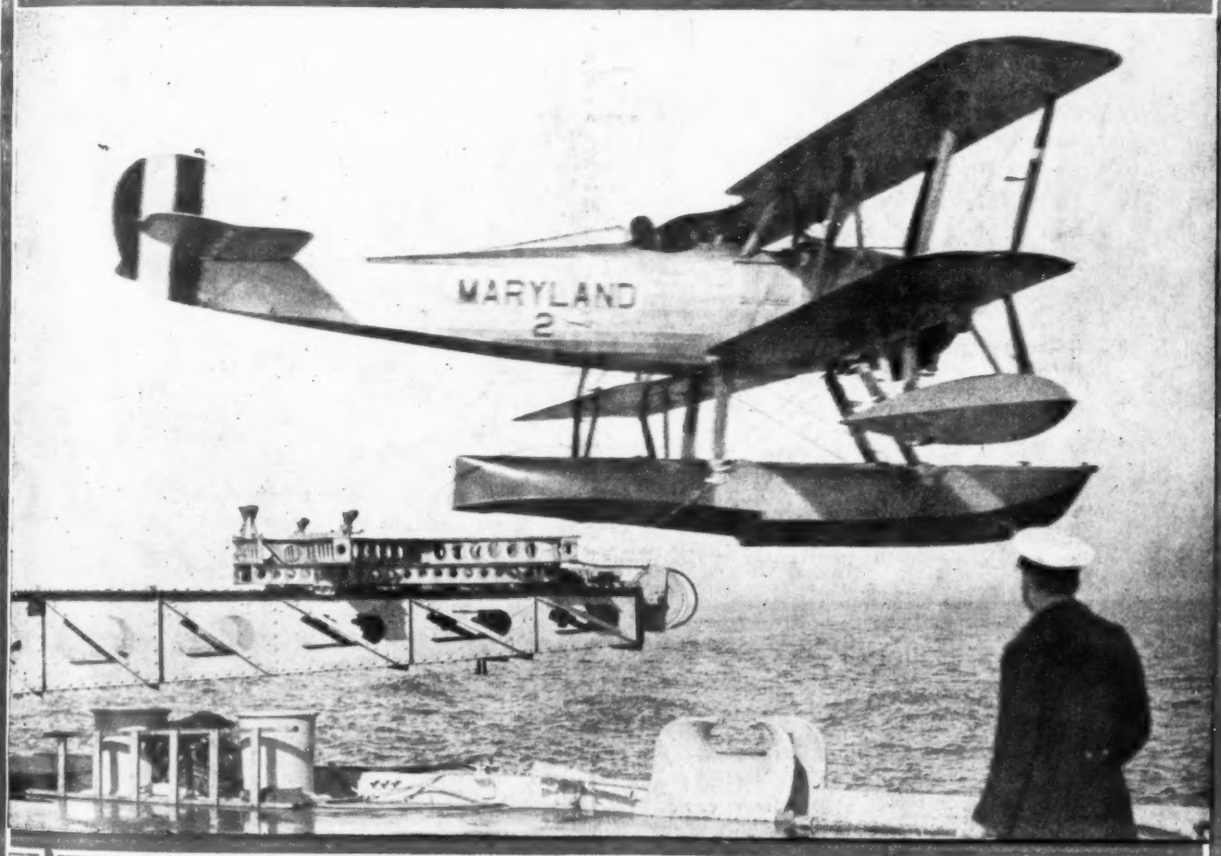

A Naval Vought UO leaving the U.S.S. Maryland by catapult

VOLUME XXII

NUMBER 18

SPECIAL FEATURES

AVIATION IN SOUTH AMERICA
VOUGHT CORSAIR NAVAL PLANE
PRATT & WHITNEY HORNET ENGINE TESTED

GARDNER PUBLISHING CO., INC.
HIGHLAND, N. Y.
250 W. 57TH ST., NEW YORK

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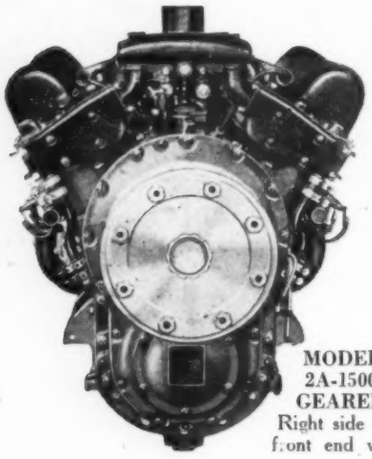
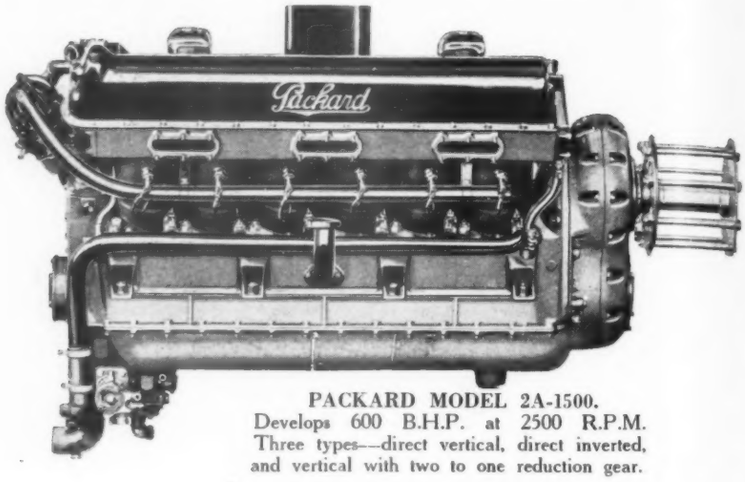


MODEL
2A-1500
GEARED
Right side and
front end views



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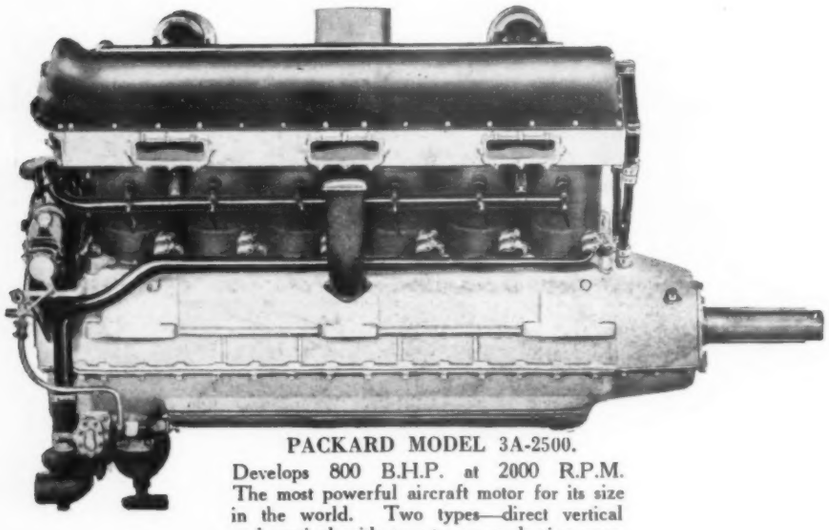

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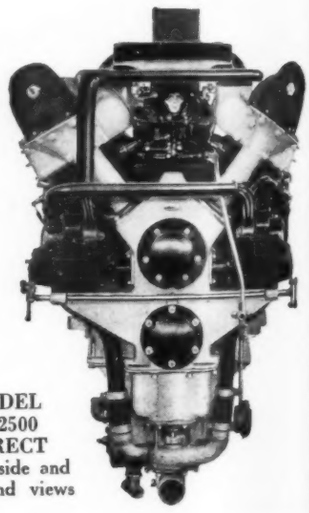

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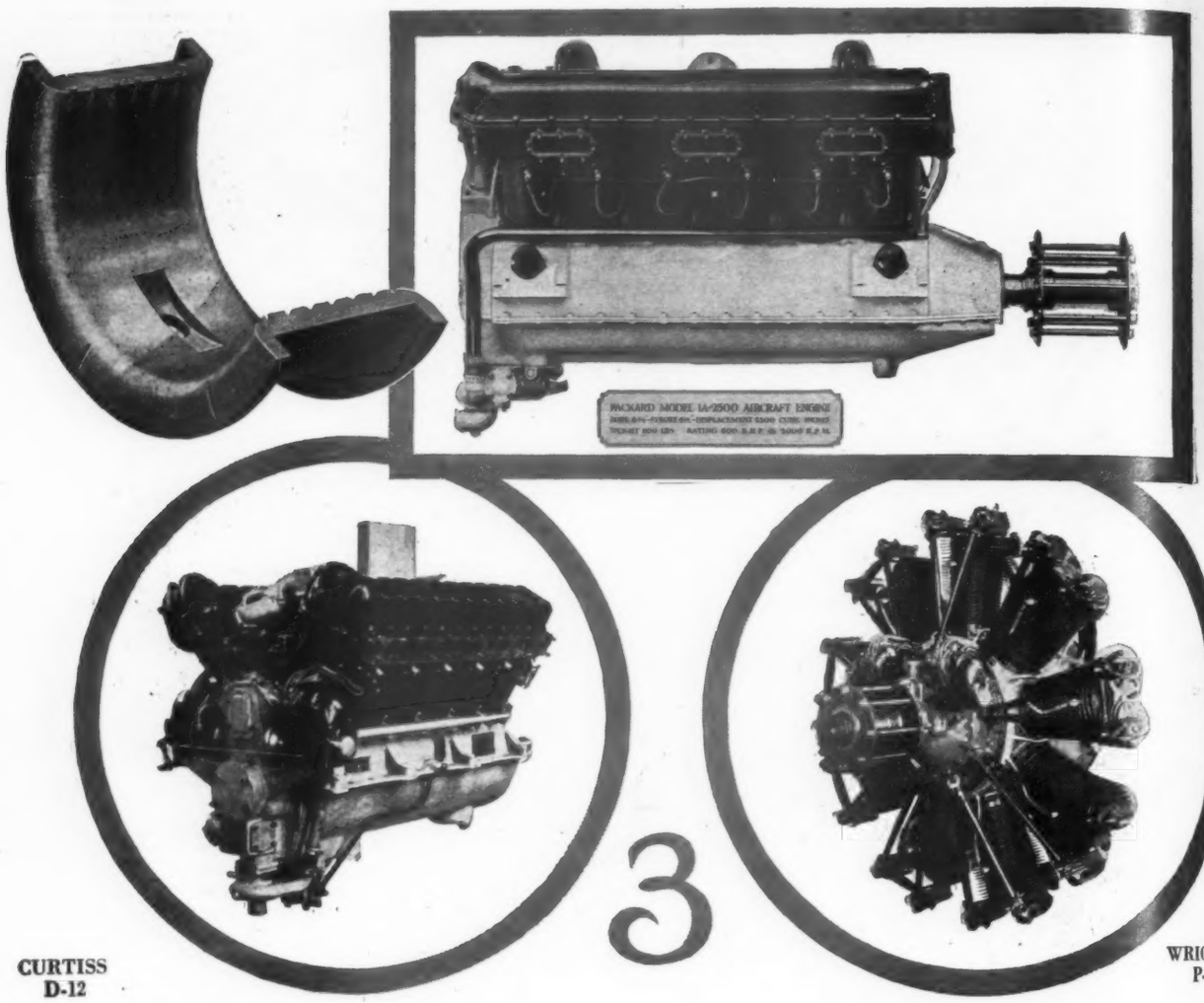

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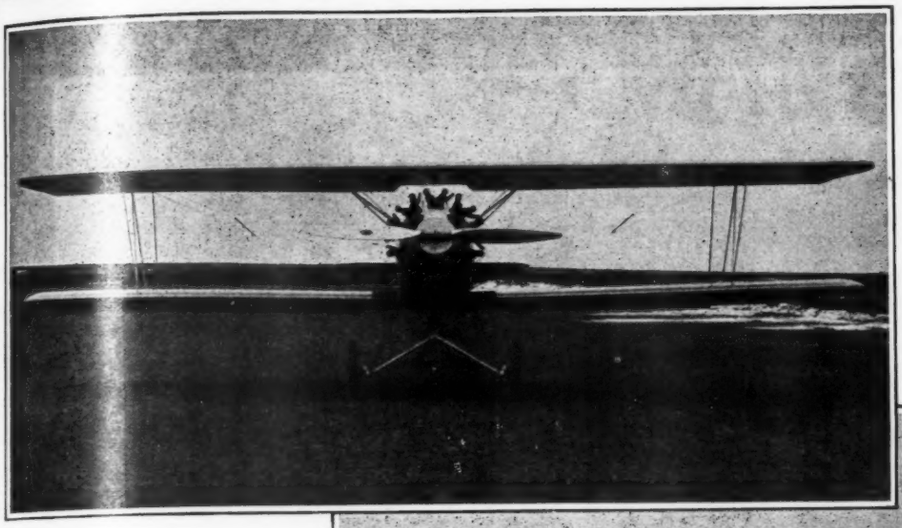

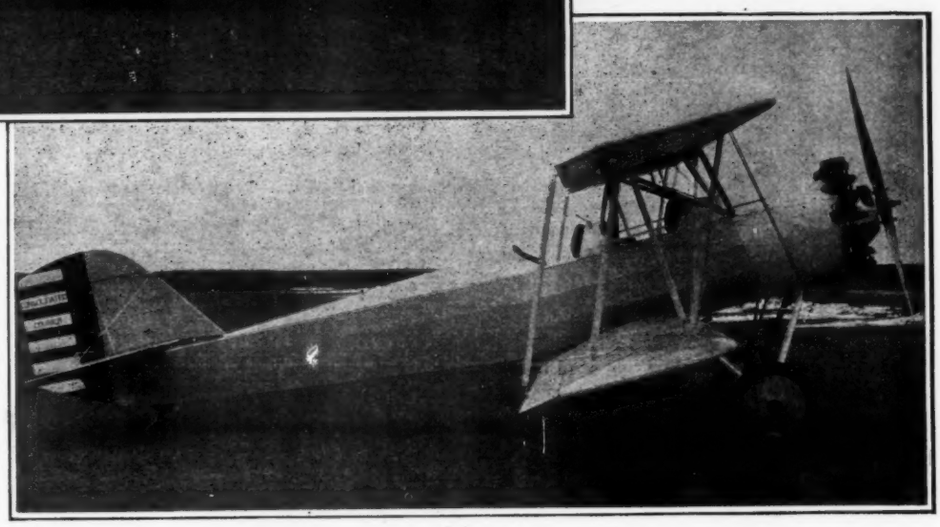

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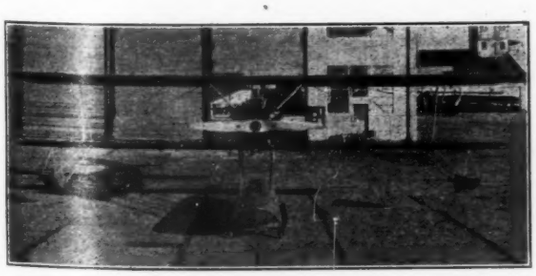

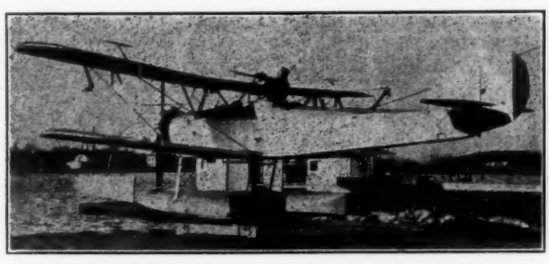

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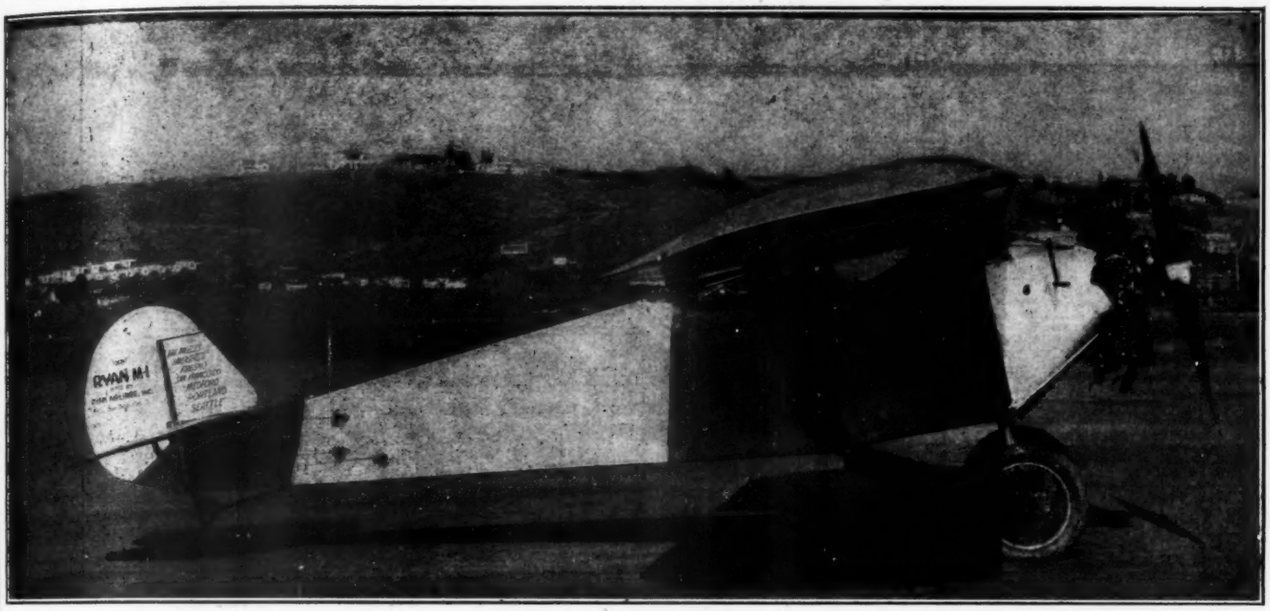

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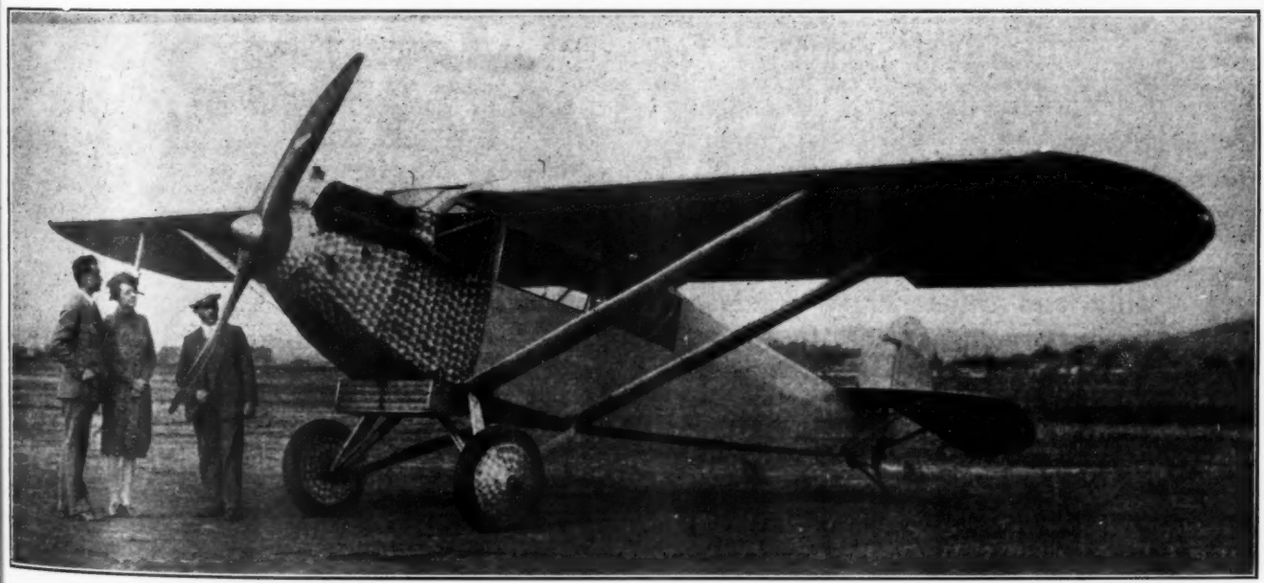

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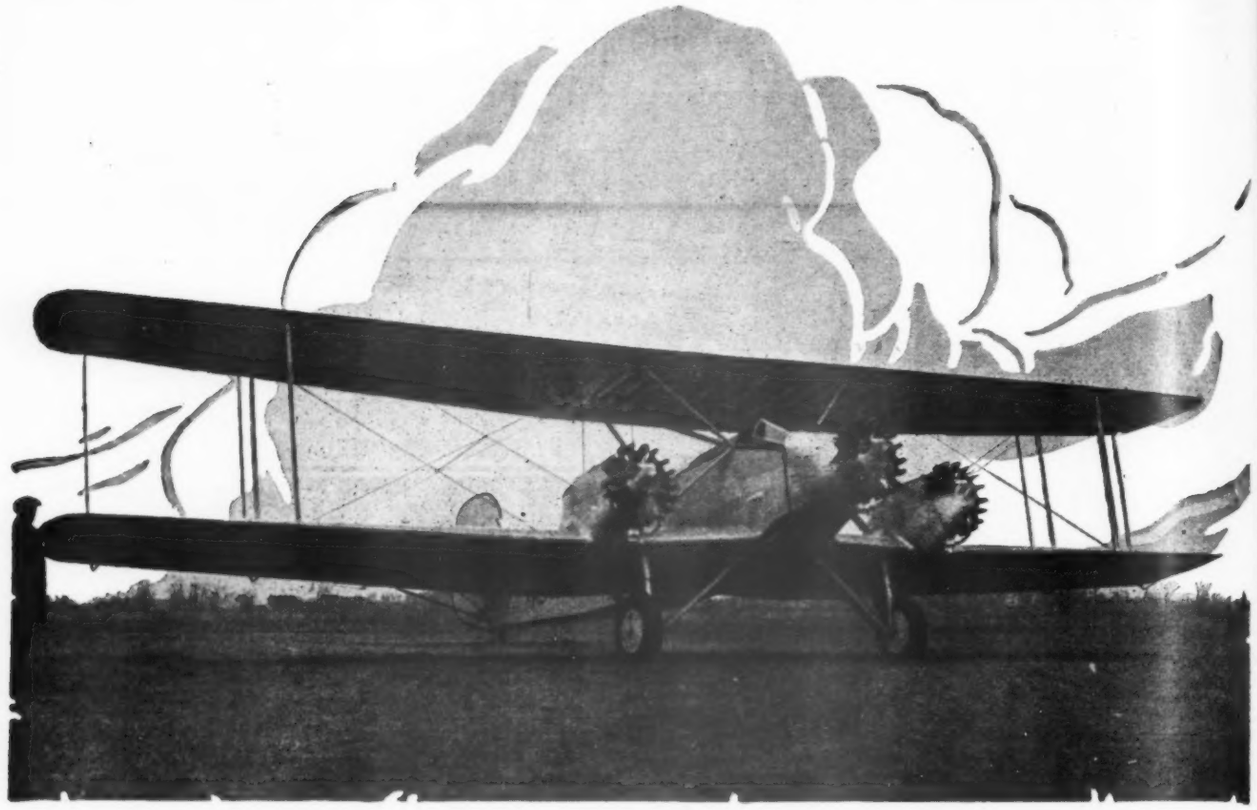

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With the Editor

To be literally with the editor this week is to be part and parcel of the All-American Aircraft Display, Washington, D. C., May 2 to 6. Weeks before the actual opening of the Display, this was where the editor really was in thought, and throughout the Show he will be there either in person or in spirit. For he feels that the importance of this project cannot be over-emphasized. Running parallel, as it does, with the Pan-American Conference, it should bring to the attention of our South and Central American neighbors the wisdom of the establishment of air routes between the two continents, the gradual expansion of commercial aviation facilities, and above all, show to American interests the strides made during the last few years in the manufacture of aircraft and their application to the needs of urban and suburban life, as carriers of mail, freight, passengers and in the pursuit of pleasure and in commerce.

• • •

A perusal of the program outlined for the five-day Display creates the impression that even the most optimistic enthusiast will view modern aircraft expansion with surprise.

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The Fairchild Aviation Corporation was formed for the purpose of organising, financing and managing a group of subsidiaries in both the manufacturing and operating fields of aeronautics.

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AVIATION

The Oldest American Aeronautical Magazine

VOL. XXII MAY 2, 1927 No. 18

Competitive Bidding for Air Mail Contracts

THE NECESSITY for letting government contracts out through a system of public competitive bidding has, unfortunately, proved necessary as a result of long experience, and, apparently, there is no other method which will convince the public that no influence or favoritism is being shown in the allocation of contracts. In many cases the Government, in the purchase of its supplies, is forced to buy the cheapest goods, irrespective of quality, but in other cases such detailed specifications are drawn up that only one particular brand will fill the bill. An absolutely inflexible system of letting contracts to the lowest bidder would not be possible, and in practice certain slight variations from the strict letter of the law have become common practice, though in cases of doubt the law may be rigidly enforced. Under certain circumstances, such as the carrying of mail by railroads and steamship, Congress has realized that service is more important than cheapness and has passed special laws to take care of the situation.

The Kelly Bill, providing for the contract air mail, naturally conforms to the general provision in regard to competitive bidding, but it is doubtful whether the framers of the law ever foresaw the conditions which have now arisen. For example, the sender of a letter from New York to Chicago by air mail pays ten cents for each half ounce and, as the letters average somewhat underweight the Post Office receives in the neighborhood of four dollars for every pound of mail, while the successful bidder on this route receives only one dollar and twenty-four cents or less than one-third of what the public is paying for the service.

The Post Office naturally, has delivery expenses and where letters go beyond Chicago they must pay the other contractor his share, but even taking this into account the Post Office seems to be receiving too large a proportion of the revenue, under a bill which was primarily enacted to foster commercial aviation.

The contractors presumably knew their business in making their bids and should not, therefore lose money, but the real question to be decided is whether or not the public is to be called on to pay the Government a great deal more extra postage on air mail than the contractor is receiving from the Government. There is no doubt that operators will gradually build up a volume of business which will eventually result in making the bidding for the contracts extremely competitive, thus bringing down the amount which the successful contractor receives, though not lessening the price which the public pays.

The matter is extremely important and in all probability will require Congressional action. There seem to be two solutions; one, a system of allocation of contracts such as is used with steamships and railroad lines, and the other, a decrease in the air mail rates so that a greater volume of mail can be carried. It is certain that if the present competition bidding system on air mail contracts is carried to its logical conclusion with bureaucratic rigor, the public will pay high rates for air mail, the contractor will not render satisfactory service nor make money, and the Government will not build up a healthy commercial aviation system.

Trans-Atlantic Hazards

THE CRASH of the Sikorsky trans-Atlantic plane last year, the damaging of the Fokker plane and the destruction of Commander Davis' American Legion plane leads even those who believe that all progress is only made by sacrifices, to question the preparatory methods now used for long distance flights. The alluring achievement of the great hop across the Atlantic is so great that it may be causing too quick a crossing of what is a prudent line from the aeronautical engineering standpoint. The duration flight of the Bellanca trans-Atlantic plane demonstrated its possibilities in a very sensible manner. If any mishap had occurred during the flight, a landing ground was nearby to provide against emergency. But when planes are given overloads that cause them to come to disaster while taking off, either the engineering computations must be at fault or too great confidence is placed on the flying qualities by the pilot. As has often been said, "The first two minutes are the most dangerous," and this applies particularly to the overloaded condition of aircraft that are expected to break distance and duration records. Before more accidents occur it would appear to be the wise course to place the responsibility for the carrying of heavy loads of fuels on the designer and in case of disaster to know who is blameworthy.

Commercial aviation will not progress by creating an impression in the mind of the public that the people operating planes do not know what they are doing, as must be the case when accident after accident occurs in test flights. If the persons who are attempting this laudable flight would realize that their objective is not only to reach the goal but to encourage aeronautical confidence, some of the chances that are taken might be avoided. To sacrifice the lives of brave and experienced pilots in experimenting with borderland loads is paying too great a penalty for the additional progress the nonstop New York-Paris flight will demonstrate.

Final Information on the Aircraft Display, Washington, May 2-6, 1927

FROM THE tentative program and the list of names on the various committees, which are printed below, it will be seen that the All-American Aircraft Display has shaped itself into a comprehensive survey of the American Aircraft Industry.

The Aeronautical Chamber of Commerce has arranged an aircraft exhibition which will embrace planes, engines and accessories forming a complete representation of the Industry. The Army and Navy will demonstrate the military side of aviation, both in equipment and thorough maneuvers. The National Aeronautic Association is sponsoring the flying part of the program.

Coincident with the Display there will be held the Third Pan-American Commercial Conference, under the auspices of the Pan-American Union, and the fifteenth annual meeting of the U. S. Chamber of Commerce. The arrival of the Pan-American fliers on the opening day promises to be one of the most interesting features of the Display.

May 4 will be known as Railroad Airplane Day, and invitations have been issued to railroad presidents of the country to attend in order that they may be told of and shown the importance of the airplane as a common carrier. The principal address on this occasion will be delivered by R. A. Cowie, president of the American Railway Express Co. There will be demonstrations of night flying and a special exhibition of night flying equipment has been arranged for this time.

The Program

The tentative program of the Display is as follows:

Monday, May 2: Formal opening of Exhibit at Bolling Field. Arrival Pan-American Fliers.

Tuesday, May 3: *Morning*—Inter-American Commission on Commercial Aviation will hold joint session with the Pan-American Commercial Conference, when the subject of transportation, including Aviation, will be under consideration.

Afternoon—This same Commission will hold an informal session with representatives of the National Aeronautic Association and the Aeronautical Chamber of Commerce. Aerial Procession. Washington-Baltimore at Noon and return.

Wednesday, May 4: Railroad Airplane Day, for which the presidents of the railroads are being invited. The Chamber of Commerce of U. S. A. will give a luncheon on this date to which members of the N.A.A. are invited, with an address by R. A. Cowie of American Railway Express Co.

Exhibit Night Flying Equipment, and Night Flying.

Thursday, May 5: An elaborate and carefully planned aerial Show has been scheduled for Thursday afternoon in honor of the delegates to the Chamber of Commerce of U. S. A., including demonstration of Commercial planes, followed by Exhibition flying.

Friday, May 6. The Pan-American delegates are being specially invited to witness an aerial Show at which demonstrations of interest to them will be given, in addition to features in the still exhibits.

Exhibitions and Demonstrations Free to All, No Admission or other charges

The followng are the Display committees with their respective members:

Reception Committee

Mr. Harry F. Guggenheim, *Chairman*; Hon. F. Trubee Davison, *Assistant Secretary of War for Aviation;* Hon. Edward P. Warner, *Assistant Secretary of Navy for Aeronautics;* Hon. William P. MacCracken, Jr., *Assistant Secretary of Commerce for Aeronautics;* Hon. Warren I. Glover, *Second Assistant Postmaster General;* Maj. Gen. Mason M. Patrick, U.S.A.C., *Chief of Air Corps;* Rear Admiral William A. Moffett, U.S.N., *Chief, Bureau of Aeronautics;* Brig. Gen. James E. Fechet, U.S.A.C., *Assistant Chief of Air Corps;* **Capt. Emory S. Land,** U.S.N., *Bureau of Aeronautics;* Franklin Adams, *Counselor, Pan-American Union;* Dr. George W. Lewis, *National Advisory Committee for Aeronautics;* Charles L. Lawrance; Clemont M. Keys; Grover Loening; F. B. Rentschler; Ruben H. Fleet; Frank H. Russell; William B. Mayo; Chance M. Vought; Edgar N. Gott; A. H. G. Fokker; Sherman M. Fairchild; Paul Henderson; John F. O'Ryan; William B. Stout; Charles H. Colvin; Albert P. Loening; Edward A. Stinson; Samuel S. Bradley; Carl B. Fritsche; Edward A. Johnson; Henry A. Berliner.

Flight Committee

Temple N. Joyce, *Chairman;* Maj. W. Fitz Gerald, U.S.A.C.; Comdr. Homer C. Wick, U.S.N.; Maj. Harvey B. S. Burwell, U.S.A.C.; Capt. William H. Crom, U.S.A.C.; Lieut. Comdr. D. C. Watson, U.S.N.; James D. Summers; Lieut. R. A. Ofstie, U.S.N.; Clarence M. Young; Dr. George W. Lewis; Carl F. Schory; R. B. Lockwood.

Exhibit Committee

Capt. William H. Crom, U.S.A.C., *Chairman;* Maj. W. G. Kilner, U.S.A.C.; Maj. Harvey B. S. Burwell, U.S.A.C.; Comdr. Eugene E. Wilson, U.S.N.; Comdr. Homer C. Wick, U.S.N.; Lieut. Comdr. D. C. Watson, U.S.N.; Capt. C. A. Schwarzwaelder, U.S.A.C.; Lieut. Col. R. P. Parrot, U.S.A.C.; George Tidmarsh; A. F. E. Horn; J. H. Perry; John F. Victory; Halbert E. Payne; Arthur E. Nesbit; James D. Summers.

Publicity Committee

Earl Findley, *Chairman;* Capt. Harold C. Major, U.S.M.C.; Maj. R. L. Walsh, U.S.A.C.; Stuyvesant B. Wright; Fred B. Neely; E. L. Jones.

Transportation Committee

Henry Price Wright, *Chairman;* A. T. Stewart; Oscar Coolican; Irving M. Day; C. G. Peterson, *Managing Director.*

List of Exhibitors

The following is a list of exhibitors, correct to date of going to press (Monday, April 25). Altogether, and including the ten Government departments, the list comprises eight-eight exhibitors, manufacturers of aircraft, aircraft engines, instruments, accessories, etc. The complete list follows:

Exhibit space	
	Airplanes
EE	Advance Aircraft Co., Troy, Ohio
AA	Atlantic Aircraft Corp., Hasbrouck Heights, N. J.
GG	Boeing Airplane Co., Seattle, Wash.
JJ	Buhl Aircraft Corp., Marysville, Mich.
	Canadian Vickers Ltd., Montreal, Canada
B	Consolidated Aircraft Corp., Buffalo, N. Y.
	Douglas Company, Santa Monica, Cal.
F-24	Fairchild Aeroplane & Mfg. Co., 270 W. 38 St., N. Y. C.
	Ford Motor Co., Dearborn, Mich.
G-26	Hamilton Metalplane Co., Milwaukee, Wisc.
H	Hess Aircraft Co., Detroit, Mich.
DD	Johnson Airplane & Supply Co., Dayton, O.
22-I	Keystone Aircraft Corp., Bristol, Pa.
C	Loening Aeronautical Engineering Corp., 31st & East River, N. Y.
CC	Glenn L. Martin Co., Cleveland, Ohio
BB	Ryan Airlines Inc., San Diego, Calif.
HH	Chance Vought Corp., Long Island, N. Y.
FF	Sikorsky Aero Engineering Corp., 250 W. 57 St., N. Y. C.
J	Stinson Aircraft Corp., Northville, Mich. Ed. Stinson.
E	Travel Air, Inc., Wichita, Kan.
2-3 & A	Curtiss Aeroplane & Motor Corp., Garden City
	Airplane Engines
12-22	Packard Motor Car Co., Detroit, Mich.
19-20	Pratt & Whitney, Hartford, Conn.
38-39	Wright Aeronautical Corp., Paterson, N. J.
	Airplane Accessories
18	Aero Supply Co., College Point, N. Y. City
101	Airships Incorporated, Hammondsport, N. Y.
	Bendix Brake Co., South Bend, Indiana
115	B. F. Goodrich Rubber Co., Akron, Ohio. Mr. H. Wacker.
103	Irving Air Chute Co., Buffalo, N. Y.
102	Macwhyte Co., Kenosha, Wisc.
126	Russell Parachute Co., 1202 Kettener Bldg., San Diego, Cal.
120	Russell Manufacturing Co., Middletown, Conn.
1	Sauzedde Corp., Detroit, Mich.
113-114	Standard Steel Propeller Co., Pittsburgh, Pa.
	Engine Accessories
106	Allison Engineering Co., Indianapolis, Ind.
138	Detroit Air Appliance Corp., Detroit, Mich.
35	Eclipse Machine Co., Hoboken, N. J.
139	Norma Hoffmann Bearings Corp., Stamford, Conn.
107	National Steel Products Co., Dayton, O.
127	S K F Industries, 165 Broadway, New York, N. Y.
112	A.C. Spark Plug Co., Flint, Mich.
30	Splitdorf Electric Co., Newark, N. J.
37	Stromberg Motor Devices Co., 58 E. 25 St., N. Y.
	Electrical
135	Acme Wire Co., New Haven, Conn.
23	B.B.T. Corp. of America, Atlantic Bldg., Philadelphia, Pa.

(*Continued on page* 896)

The Development of Aviation in South America

Latin American Countries Present Favorable Conditions For Air Development. Governments Are Receptive To Air Progress

By W. L. Le PAGE

AT A TIME when the Third Pan-American Commercial Conference, and the Pan-American Commercial Aviation Conference are to meet in Washington, D. C., during the week of May 2, it is very appropriate to give some considerable thought to the extent to which aviation, both civil and military, has developed in Central and South America and to the possibilities of such further development in the near and distant future.

South America is a continent of great natural wealth but only now being developed to anything like a reasonable extent yet still very largely a closed land. Some idea of the vastness of the South American continent may be obtained from the fact that of its area of 6,889,000 sq. mi. is a little over two thirds that of the North American Continent (9,323,000 sq. mi.) while its total population is but 50,000,000 compared with the 145,000,000 of North America and the latter continent cannot by any means be regarded as uniformly thickly populated.

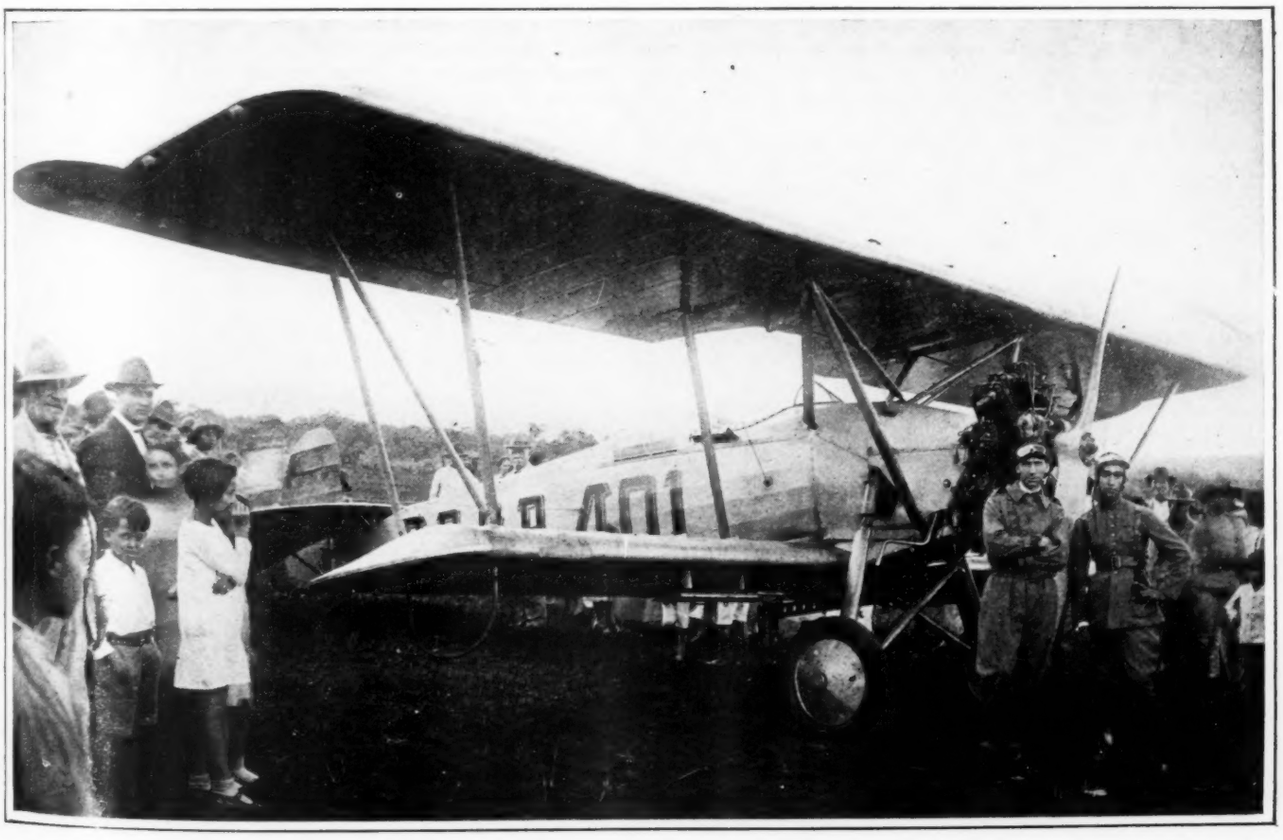
Viewed in a broad light, the possibilities of the development of aviation in South America are tremendous if for no other reason than that of the importance of any system of modern transportation in the upbuilding of trade and commerce throughout the wide land. Commercial air transportation is developing in the United States for this very reason and the lack of railroad competition in certain sections of South America only serves to add brilliancy to an already glowing picture.

Nor are the prospects in the Latin Americas entirely in the field of transportation. The natural wealth of the land itself presents a field for the development of aerial service into the details of which no explanation is necessary to obtain a general idea of the wide possibilities. Furthermore, from a military standpoint, the mere fact that the South American continent is composed of a number of individual republics, not united under a common constitution, suggests immediately the need for aircraft in national defense.

European Interests

In spite of the keen competition in the field of civil aviation in Europe, fanned up by government subsidies, watchful eyes have long been cast by the European aircraft industries upon the potential aircraft market in Latin America and to the opportunities for commercial operation of aircraft in these regions, with the result that we find whatever aeronautical activity already exists to be, for the most part, backed and sponsored by interests in one or other of the European countries, notably Germany and France.

While its operations are said to be much disassociated with



Orton W. Hoover, chief of the San Paulo Air Service (left), and his observer Lieut. Naul Azerdo, just after landing at Santa Rita do Paranahyba, State of Goyaz, Brazil. The plane is the Keystone Petrel (Wright Whirlwind engine).

Germany at this time, it is a generally accepted fact that in the early days of its operations, the airline up the Magdalena River in Colombia, operated by the "Scadta" company had their origin in German interests. The Argentine has also come in for the attentions of German operators in the past although the air operations up and down the River Plate have not, to be sure, been very continuous, or extensive.

French Competition

As far as French activities in South America are concerned, it will be remembered that some years ago a French mission headed by Capt. Rene Fonck toured South America, demonstrating French aircraft and stimulating local interest in French aeronautical products and French methods. Some years ago, also, an airline was operated by French interests in French Guiana, although these operations did not actually continue over any length of time. Furthermore, the French have long had under consideration a project, which may actually materialize during the present year, for the operation of an air line between Dakar, in French West Africa, and Pernambuco, in Brazil, rather as a counter-action to the proposed Spanish-German line of airships proposed between Seville, Spain, and Buenos Aires, the capital of the Argentine.

In the meantime, the United States, while not remaining entirely indifferent to the possibilities of the development of aviation in South America, has not, to be sure, given the subject such whole-hearted consideration. A number of cases, could, however, be cited of United States activities in the Latin Americas which have proved of major importance in their individual ways, while in Central America, United States activity has, in its way, been very marked. So that, while there is a field of such width that no former attack upon the Latin American market can justly be considered to have made any lasting impression, it is satisfactory to observe that that which the American Aircraft Industry has already done in the southern regions has been of paramount importance in laying the foundations upon which future activity is bound to grow.

In Central America, likewise, there appears to be a very real and, one might say, immediate field for the development of civil aviation for the nature of the terrain is such that, certainly along the Pacific coast, flying privately gives every promise of becoming popular and for this reason it is not unlikely that a definite market may grow up in a small three-place or four-place open cockpit or closed cabin type of commercial plane with a low horsepower engine; in other words, a more or less popular priced machine suitable for private or small company ownership. American aircraft are by no means unknown in those regions between Yucatan and the Canal Zone and the mere fact that the Air Corps operates regularly from France Field, which is right in that district, must undoubtedly have had its effect upon certain of the Central American populace.

With little doubt one of the best methods of indicating the possibilities of the development of aviation in Central and South America is to set forth in as concise a manner as possible that progress which has already been made with a view to pointing out the lines along which the problems have already been tackled and the measures of success achieved and, furthermore, those avenues of possibility which have not yet been opened up. It is proposed to proceed forthwith with such a discussion under the headings of the different countries or republics concerned. In each case the geography of the land will have an important bearing upon aeronautical development and will, therefore, be set down in brief.

Argentina

The Argentine, as the second largest republic of South America, presents wide possibilities for the development of aviation. With the exception of the mountainous districts which stretch down the western border, the land consists of grassy plains, and forest hill on which cotton and other crop farming together with cattle farming abound, suggesting immediately the possibilities of the use of aircraft in the numerous forms of aerial service at present developed. Most of the land is dependent in some way upon the Capital, Buenos Aires and yet much of it is devoid of railway service which indicates a wide use of air transportation as an immediate possibility. Practically all the pioneer development is said to have been carried out by British interests although French and Italian missions have been active for several years. It is the German Junkers company, which, however, appears to have gained the greatest cooperation from the Argentine government, with the result that of the two air transport companies last year operating in the Argentine, one was the Junkers Mission of Buenos Aires, which ran the Buenos Aires-Montevideo service three times weekly. The other concern was the Aero Lloyd of Cordoba, which operated the service from Villa Dolorès, via Cordoba to Rio Cuarto, also three times per week although this latter service was by no means regular. The Junkers mission is said to be supported by Argentine capital. The machines employed on the service to Montevideo are Junkers seaplanes with 185 hp. B.M.W. engines. The time required for the one way flight is slightly less than two hours. The operators hold a mail carrying contract with the governments of the Argentine and Uruguay. In addition, each plane carries four passengers at a charge of approximately $20.00 per passenger for the single way trip.

Sao Paulo as seen from the air. The photograph was taken by Otton W. Hoover from the Petrel.

The Villa Dolores service is unimportant, being operated very irregularly and using only one airplane.

It is understood that the government of the Argentine is carrying out experiments with one airplane in spreading insecticides to combat the severe locust plague in the Province of Sante Fe. If this work is successful, the use of planes in dusting work is certain to develop.

It is reported that to date Argentina has no legislation governing or encouraging civil aviation, although one or two proposals for such legislation have been introduced in the Argentina Congress. The only restriction on aviation at the present time is that preventing planes from flying in Argentina without first securing permission from the ministry of Foreign Affairs. Commercial aviation in the country is under the supervision of the Department of Civil Aviation of the Aeronautical Service of the Army.

It will be recalled that in 1925 it was reported that both the Army and the Navy of the Argentine had made purchases of aircraft to the total extent of approximately twenty planes, in the United States.

Bolivia

A large portion of the Republic of Bolivia, the most sparsely populated of all South American Republics, is desert land, particularly in the south while the people of the north, which is more inhabited, devote their time to rubber growing and timber farming. Internal communication is very de-

fective, there being only three railroads of a total mileage of 1,500 miles.

Aeronautical activity in Bolivia in the past have not been very extensive although the possibilities are said to be considerable. The only service operated so far is one between Chamber of Deputies of the Bolivian Congress by the Deano Company. The equipment on this service consists of two Junkers airplanes capable of carrying passengers and mail. The trip by air takes from two to two-and-a-half hours compared to the only other method of transportation—mule back—requiring from ten to twelve days.

Extensive plans for the future development of air transportation are under consideration. A subsidy to the extent of 20,000 Bolivars is provided for in a bill presented to the Chamber of Deputies of the Bolivian Congress by the Department of Vera Cruz, for a mail and passenger service in Eastern Bolivia, between Santa Cruz, San Jose de Chiquitos, Robore, and Puerto Suerez. New landing fields are to be built in Bolivia at Mizque, San Isidro, El Paso, Panpa Grande and Taruma.

Brazil

Brazil occupies more than one half of the entire South American Continent. From north to south the extreme measure of her territory is 2,630 miles; from east to west it is even greater. The majority of the interior of the country is high plateau with a general elevation of from 1,000 ft. to 3,000 ft. and much of the present industrial transportation is carried on by water along the Amazon, the Plata and the San Francisco Rivers. The railway system is reasonably good with a total mileage of about 20,000 miles connecting with the systems of neighboring republics. The chief industry of the land is coffee growing, the next natural product being rubber, while both the forests and mines of Brazil are of great importance. Thus, there is considerable industrial encouragement for the development of both air transportation to speed up travel and of aerial service.

Mention has already been made of the plans of the Latécoère company of France to operate a plane and boat service between Dakar, in Africa, and Pernambuco, a proposal which shows reasonable signs of taking concrete form during the present year. In Brazil an air line between Manaos and Bolon has been authorized by the State of Amazonas. The contract has already been awarded, it is reported, and the line is expected to be in operation in the near future.

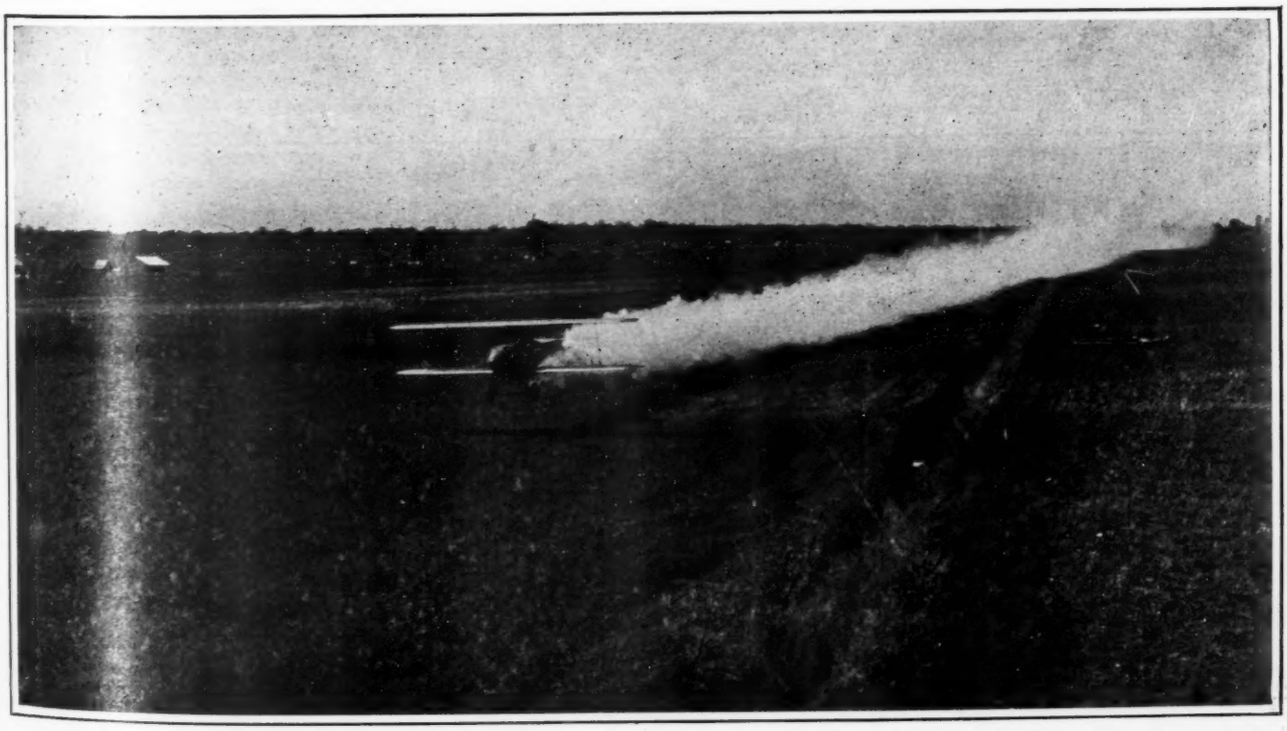
It is understood further that plans are already in concrete form for the operation of an air line in Rio Grande do Sul. The lines to be operated are: Porto Alegre to Pelotas and Rio Grande; Porto Alegre to Santa Maria; Porto Alegre to Praia de Banhos and cities along the coast.

It is understood that there is a central meteorological office in Rio de Janiero which can furnish general information on aerological conditions over Brazil. Included in the general system are nine stations which make upper air soundings with balloons.

A letter recently received by the Keystone Aircraft Corp. of Bristol, Pa., from Orton W. Hoover, chief of the Sao Paulo Air Service, Brazil, gives some interesting personal viewpoints which may serve to indicate in some measure the possibilities of development in Brazil, at least as regards one aspect of the general problem. Furthermore, it serves to indicate that some products of the American Aircraft Industry have already arrived in Brazil, a fact which, while being by no means unknown, may well be established in part by the present instance. The letter follows in extract:

Sao Paulo, March 29, 1927

"I have done about 8,000 miles flying in the Petrel we have now, and about 5,000 of this up through the interior of Brazil where no fields of any kind exist and to date we have not had to change a single stick of the machine. I do not think I have ever flown a machine that is so easy to get into and out of small fields. Incidentally, the Wright Whirlwind engine, too, has been functioning perfectly. The only solution to the development of aviation in Brazil is just that. In one day I covered in nine hours and seven minutes elapsed time or six hours and twenty minutes flying time, a distance which takes, by existing means of transport, over five days of continuous traveling. About 1,200 km. We were almost five hundred miles beyond the end of the railroad into the interior of the State of Goyaz. At one time I was just a few miles from the center of the diamond district of Brazil. One of my pet ambitions is to be able to run an airplane line from the city of Sao Paulo up to this district. The mail and merchandise



AERIAL SERVICE AS IT IS CARRIED OUT IN THE UNITED STATES. Cotton dusting plane of the Southern Dusters, Inc., Tallulah, La.

would almost pay even with the country so undeveloped as it is at present. It is only an eight to nine hour flight, whereas it now takes eight days by train, Ford and mule pack.

"Unfortunately my time up there was very limited and was also taken up with other things so that I was unable to go to all the places I wanted to visit or do the things I would like to have done. It was a military expedition undertaken by the Sao Paulo State Militia to clean up a band of rebels that had been causing trouble there ever since 1924. Aviation took a big part in this expedition and I went along as technical advisor. The Keystone Petrel was the only machine which came back. I myself crashed another plane when I was forced to land just after crossing the Paranahyba River, which forms the border between the States of Goyaz and Minas Geraes. I landed in the jungle about five miles from the railroad but as it was early in the morning my mechanics and I were able to get back to semi-civilization before night. We tried to take two Jennies up also. One JN reached the town of Formoza in the State of Goyaz but crashed the following day owing to the small field. The pilot of this plane was Lieutenant Negrao who has just gone to Cape Verde to be second pilot on the 'Jahu', the flying boat which tried to fly from Italy to Brazil last fall."

Chile

Chile, with a coast line 2,625 miles in length, yet the entire country in no point more than 90 miles in width, presents an unusual proposition from every standpoint, aeronautical or otherwise. There are 22,000 miles of public highway and the Longitudinal Railway of Chile traverses the republic from north to south over a track distance of 2,854 miles, and it would appear that these provide for the major transportation needs of the country. There is undoubtedly, however, a considerable amount of coastal traffic and much of this that is of an express nature might well be speeded up with seaplane service. Just the extent of the possibilities appears never to have been summed up definitely, however, although the Chilian government has by no means disregarded aviation.

Military aviation is under the Directorate General of Military Aeronautics, while there is also a Directorate of Naval Aeronautics. It has been reported that there are some three-engine Junkers machines in the military service.

Colombia

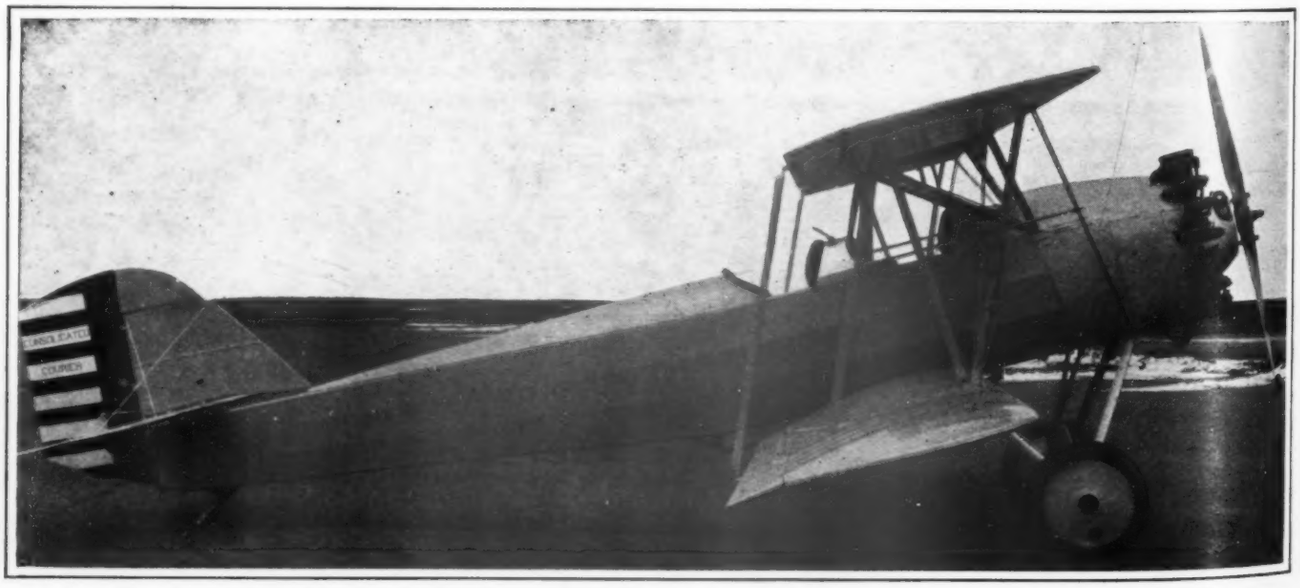
Colombia was the first of the Latin American republics to develop commercial aeronautics and the operations of the Scadta, to which reference has already been made, need no introduction. The country is tremendously rich in natural products, notably coffee, minerals and rubber, and industry is busy, yet constantly hampered by lack of transportation facilities. Colombia cannot be said to possess a railroad system. The few railroads are detached lines connecting important towns with the sea or the Magdalena River, which is the main artery of traffic, even though this river is closed to through traffic at certain times of the year when connection across the closed links has to be made by means of mules, etc.

It is not surprising, therefore, that the Sociedad Colombo-Alemana de Transportes Aeros, which operates a line of seaplanes up the Magdalena from Barranquilla to Giraardot, 662 miles; Girardot-Neiva, 94 miles; and Barranquilla-Cartagena, 75 miles should have proved a financial success. In 1926 the Scadta operated ten aircraft consisting of: five single-engine Junkers pontoon seaplanes, with 185 hp. B.M.W. IV engines, each with a seating capacity of four passengers in addition to the pilot; two single-engine Junkers airplanes with B.M.W. III engines and a seating capacity of five passengers; one Dornier Merkur pontoon seaplane, single B.M.W. VI 450 hp. engine, with seating capacity for six passengers in closed cabin; two Dornier Wahl flying boats with twin B.M.W. VI engines of 450 hp. each and having a seating capacity of ten passengers in a closed cabin.

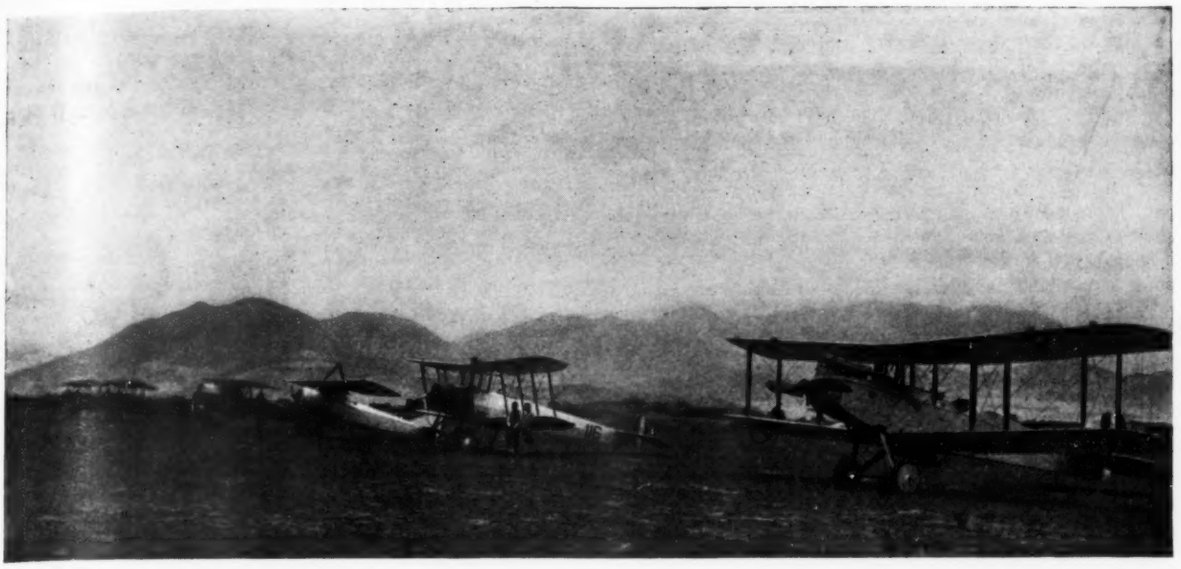
The Scadta has formed three associated companies known, respectively, as the Condor Syndicate, the International Aerial Surveys, and the Compania Stranandereana de Aviacion. The former undertakes experimental air transport operations, the second has been very active in planning and carrying out air surveys which appear to have a wide future in Colombia, while the third is responsible for the operation, on behalf of the Scadta, of the Sabana de Torres-Bucaramanga service.

Reconnaissance work and mapping in tropical Colombia, with its almost entire lack of adequate communication facilities, impose tremendous obstacles upon those engaged in the continuous hunt for new sources of oil supply, etc. This fact can only be fully realized when it is recalled how men have been shut in by the tropical foliage for months at a time, often not even able to see the sun above.

In Colombia and Venezuela, it will be recalled that there has been, in the past, much controversy over the question of an exact boundary line. In May, 1923, the Swiss Engineering Commission, which acted as an arbitrator to determine the correct boundary, engaged the services of the International Aerial Surveys of the Scadta to fly over and take photographs of an area of about 1,240,000 acres south-southwest of Lake Maracaibo. The entire survey was completed within



A MODERN SERVICE TRAINING PLANE. The Consolidated Courier (Wright Whirlwind 225 hp. engine) dual control training machine. The plane is a Navy type and is also equipped with single-pontoon undercarriage. Gunnery practice is one of the uses to which the Courier is put.



Planes of the Peruvian Air Force on the flying field at Lima. Right to left, there are, apparently, a DH. with Siddeley Puma engine; an Avro with 120 hp. Gnome; a Morane Saulnier with Le Rhone engine; an S.V.A. and two Keystone Dusters (Whirlwind engines).

a total of 25 flying hours and one month of office work, while by land the survey would have involved cutting away large expanses of undergrowth, the expenditures of enormous sums of money and years of the hardest work.

In connection with the possibilities of the aerial survey in Colombia, and, for that matter, in the whole of tropical South America, it will be of interest to quote the opinion expressed by Louis Dagenais, chief geologist of the Colon Development Company, as follows:

> "During the short time spent in our flight over the Catatumbo and Terra Rivers from Encontrados to Puerto Reyes, I have been able to obtain an idea of the topography and drainage of the land which has proved impossible even after several years devoted to the study of this region. From this short flight I am convinced of the possibilities of the aerial photographic method in the exploration of territories similar to that of the Terra-Catatumbo valleys."

It is of passing interest to recall that during one survey flight made in southern Colombia, a Motilone Indian village was discovered, its location heretofore being absolutely unknown. The possibilities for aerial service in tropical South America are unlimited and the unsurpassed experience of United States commercial operators undoubtedly places this section of our aeronautical industry in the most advantageous position to serve Latin American needs in the most effectual manner.

Paraguay

One of the only two inland countries of South America, Paraguay has apparently, not until recently taken any serious cognizance of the possibilities of aviation, either from the standpoint of commerce or defense. Nevertheless, the transportation facilities throughout the land are extraordinarily poor and present no real possibility of improvement. The total railroad system is but 300 miles in length and the main artery of traffic is by steamer up the navigable portion of the River Plata. While this system is adequate it is extremely slow.

The government is, however, making a great effort at this time to develop an efficient aeronautical organization, both from standpoints of national defense and commerce. Paraguay is reported to be in the process of organizing its army under the direction, it is said, of a mission from France. Aviation is deemed to be the principle arm of defense, particularly because of the low percentage of population per square mile and the meagre transportation facilities already available. The military flying service at the present time consists of but a few machines of types already more or less obsolete and for the most part of European design and a few pilots trained by the French Mission.

Plans point, however, to the immediate expansion of this nucleus. Five modern training planes are reported to have been ordered from France early in the year. A flying field is being built up at the capital, Asuncion, where a school of military aviation is to be opened.

The establishment of the School of Military Observers, as well as one for the training of pilots and the formation of flying squadrons, is included in the program for the coming year. Furthermore, proposals are afoot for the opening up of certain air lines into the interior of the country under commercial operation with modern transport machines. An elaborate system of landing fields is projected.

Peru

Peru is a country in which the development of aviation appears to have wide possibilities if for no other reason than that the government of the republic is favorable toward its development and the industries, which are very active, need it. Transportation is carried out over a mountain railway system which totals but 900 miles in length while a great part of the inland travel is still carried by troops of Llamas driven by Indians.

Owing very largely to the activities of the United States Naval Mission to Peru, the Peruvian government is taking a serious interest in the possibilities of the development of all forms of aviation. This mission, under the leadership of Commander Harold B. Grow, has done much to break down natural opposition, with the result that after a little more than three years spent in the organization and building up of naval aviation, some definite activity is looked for in the immediate future. At the present time the flying division consists of a few war time airplanes, largely of European manufacture, and a few good pilots. Commander Grow, it will be recalled, came to this country a few months ago with a view to purchasing some American aircraft for service in Peru. The plan for development appears to be to engage the aviation service in air line operation with a view to maintaining a trained flying personnel while at the same time making it, to a certain extent, useful and possibly self-supporting.

The Supreme Decree of September 20, 1926, provided for an airline between Lima and Iquitos, which is in the northeast corner of Peru, over 700 miles from the coast and at the far side of the Andes Mountains. To reach Iquitos, it is at present necessary to go, either around to the other side of South America and travel up the Amazon river at a distance of 2,300 miles, or else to cross the Andes at a height of 17,000 ft. This latter method necessitates a journey of one day by train, one by automobile, seven by pack mule, two days in a

canoe and from six to fifteen days in launches. Yet, Iquitos is the center of the rubber industry and is a city of extreme industrial importance.

The proposed air service would be carried out by seaplane and the total journey consume but two or possibly three days. It is reported that 45,000 Peruvian pounds (about $250,000) is included in the general budget for 1927 for the expenses of this proposed service. The air operations will be from Oroya to Iquitos, passengers continuing to use the train service from Lima to the first named point.

It is part of the plan to carry out aerial surveying with air service equipment in addition to the air transport operations.

No mention of the air operations in Peru would be complete at this time without some reference to the recent expedition of the Huff Daland Dusters to Lima under contract to dust wide expanses of the cotton fields in the Canete valley. These operations are still in process and are said to be attracting the widest attention throughout the entire country.

Uruguay

Uruguay is a country of wide open plains and rolling hills of low altitude in general and, as such, may be regarded as favorable for air operations as there appears to be plenty of prospect for the development of flying fields. There is a military aviation section under the command of the General Staff of the Army, although little information is to be found regarding its activities. To a limited extent there has been some commercial aviation activity in Uruguay a service having been operated for a time in the past between Montevideo and Buenos Aires. At the present time the Uruguayan government is trying the experiment of domestic air mail service, a temporary line having been established between Montevideo and Rocha. A company, known as the Centro Nacional de Aviacion has been organized and is operating the service.

Venezuela

Venezuela, like so many other South American republics, depends, to a very large extent, upon its water ways for transportation. Little has as yet been done in the development of air transportation and there does not appear to be any report indicating that the government has given much consideration to the possibilities of air transportation. Yet in the field of aerial survey work, German interests appear to have been active, and, as already inferred, a considerable amount of aerial photography has been carried out particularly along the Venezuela-Colombian border.

It is reported that the government has some airplanes of French manufacture which are used for military flying. There is, however, a very strict embargo placed upon the importation of aircraft from abroad.

Flow and Drag Formulae

Report No. 253, covering "Flow and Drag Formulas for Simple Quadrics," compiled by A. F. Zahm for the National Advisory Committee for Aeronautics, gives the pressure distribution and resistance found by theory and experiment for simple quadrics fixed in an infinite stream of practically incompressible fluid. The experimental values pertain to air and some liquids, especially water; the theoretical refer sometimes to perfect, again to viscid fluids. For the cases treated, the concordance of theory and measurement is so close as to make a resume of results desirable. Incidentally formulas for the velocity at all points of the flow field are given, some being new forms for ready use derived in a previous paper and given in Tables I, III. A summary is given on page 22.

The present text is a slightly revised and extended form of Report No. 312, prepared by the writer for the Bureau of Aeronautics in June, 1926, and by it released for publication by the National Advisory Committee for Aeronautics. A list of symbols follows the text.

This report may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.

All-American Aircraft Display

(*Continued from page* 890)

The following is a continuation of the list of aeronautical exhibitors at the All-American Aircraft Display, Washington, May 2-6:

134	B.G. Corporation, 135 W. 52 St., N. Y.
H	Herbert Bucklen Corp., Elkhart, Ind.
15	Electric Storage Battery Co., Philadelphia, Pa.
9	General Electric Co., Schenectady, N. Y.
31	Leece Neville Co., Cleveland, O.
25	Claude Neon Lights, New York, N. Y.
13-D	Pioneer Instrument Co., 754 Lexington Ave., Brooklyn, N. Y.
40	Scintilla Magneto Co., Inc., Sidney, N. Y.
27	Sperry Gyroscope Co., Brooklyn, N. Y.
28-29	Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.
	Materials & Supplies
122-123	Aluminum Co. of America, Pittsburgh, Pa.
109	Berry Bros., Detroit, Mich.
108	Haskelite Mfg. Corp., 133 W. Washington St., Chicago
	Perry Austen Mfg. Co., Inc., Staten Island, N. Y.
	V. G. Posey, Hoquiam, Wash.
110	Jona A. Roebling's Sons Co., Trenton, N. J.
	E. S. Twining & Co., 320 Broadway, N. Y.
133	Vellumoid Co., 73 Tremont St., Boston, Mass.
	Miscellaneous
10	Aircraft Development Corp., Detroit, Mich.
4	American Oil Co., Baltimore, Md.
	A. Black, Engineering Services, Garden City, N. Y.
	Eberhart Aeroplane & Motor Co., Buffalo, N. Y.
8	National Air Transport Co.
16-17	Payne Export & Import Co., 150 Broadway, N. Y. C.
	Southern Dusting Co., Inc., Tallulah, La.
116-117	A. G. Spaulding & Bro., 150 Nassau St., N. Y. C.
11-12	Vacuum Oil Co., 165 Broadway, N. Y.
5	E. B. Meyrowitz, Inc., 520 5th Ave., N. Y.
	Magazines
111	Aero Digest, 220 W. 42nd St., N. Y.
130	Aviation, Fiske Bldg., 57 St. & Broadway, N. Y.
140	Slipstream, Dayton, O.
14	U. S. Air Service
	Government Exhibitors
6-7	U. S. Army Air Corps
33-34	U. S. Navy
104-105	Weather Bureau
136-137	U. S. Bureau of Entomology
36	Forestry Service
124-125	U. S. Coast & Geod. Survey
118-119	U. S. P. O. Dept.
131-132	U. S. Geological Survey
128-129	U. S. Dept. of Commerce
121	U. S. Coast Guard

Second California Aviation Conference

The Board of Directors of the California Development Association has authorized the calling of a second state conference on commercial aviation, which will be held in San Francisco May 6.

Last year the association held a conference, in which more than 250 business men participated. Out of this came a constructive program, dealing with such problems as legislation, municipal airports, air mail, etc. The second conference will feature an open aircraft show, which will be held at the new San Francisco municipal airport, and a state educational tour. As many types of airplanes as possible will be assembled at the show.

On May 7 as many planes as possible will fly to Sacramento where all pilots and passengers will be guests of the Chamber of Commerce at a luncheon. Following the luncheon, the party will fly to Stockton for a stop of an hour. From here the planes will go to Fresno, where a banquet will be held under the auspices of the Fresno Chamber of Commerce. The next day the party will proceed to Bakersfield for luncheon, as guests of the Bakersfield Civic Commercial Association. At all these cities, landings will be made on municipal fields and the public will be invited to inspect the planes.

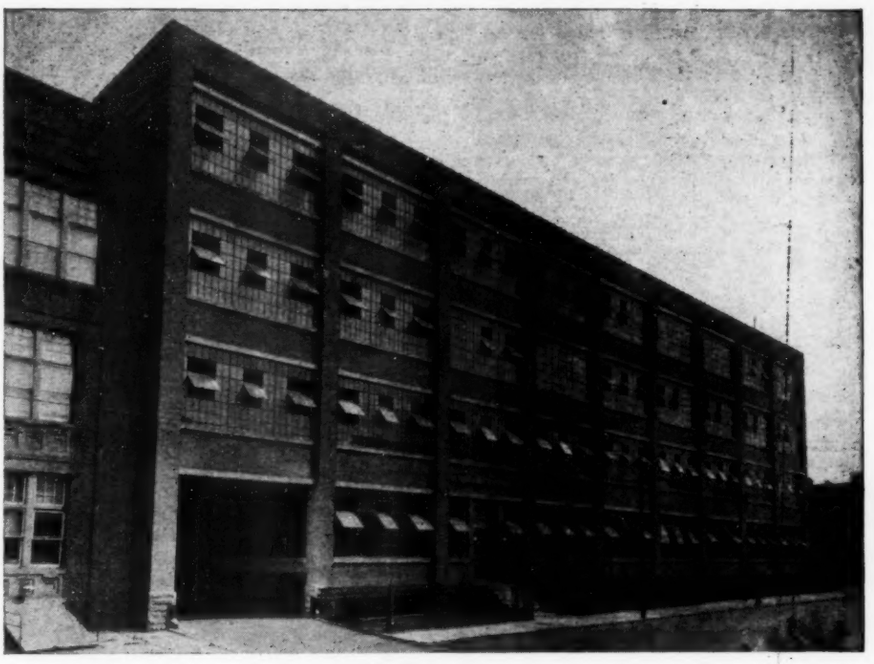
Bids Asked For Hangars

Sealed bids for two seaplane hangars for the Naval Air Station at Pensacola, Fla., were asked by the Bureau of Yards and Docks, of the Department of the Navy on April 22, the bids to be opened on May 25.

Certain requirements to be considered by the bidders are that the two hangars shall have concrete foundations, steel framing, built-up roofing on wood sheathing, steel siding, sliding doors, steel and metal covered swinging doors, steel sash, roof ventilators, and electric lighting; and new steel sliding doors for existing hangars.

Pratt & Whitney Hornet Engine Successfully Passes Navy Fifty Hour Type Test

New Air-Cooled Radial on Test Develops 525 hp. and Weighs 1.28 lb. per Horse Power Installed. Likeness of Engine to Well-Known Wasp Type Enables Ready Interchange in Aircraft.



The home of the Pratt & Whitney Aircraft Company in Hartford, Conn.

SOME TIME ago it became generally known that the Pratt & Whitney Aircraft Company had undertaken the experimental development of a new type of air-cooled radial engine. It was recently announced by the Navy Department that this new engine, the Hornet, had successfully passed the formal Navy fifty-hour test. This test was conducted at a power rating of 525 hp. believed to be higher than in the case of a formal test conducted by any government on an air-cooled type of engine. Moreover, it is believed that the relation of weight per horsepower as shown on test is lower than ever previously obtained on any air-cooled type of engine, either here or abroad.

The Hornet was especially designed for the Navy Department for use in thier weight-carrying or bombing types of airplanes. The engine is to be furnished either as a direct drive or as a geared type. The test referred to above was for the direct drive engine. It is expected that a geared type test will shortly be undertaken.

Similar to the Wasp

The Hornet engine is exactly similar in design to the well-known Pratt & Whitney Wasp, the principal difference being in size or displacement. The Wasp is approximately 1300 cu. in. displacement, as against about 1,700 cu. in. for the Hornet. The similarity in design of these two engines is best indicated in the illustration showing the Wasp and the Hornet side by side. From a service, as well as manufacturing standpoint, it is of unusual interest to know that approximately 80 per cent of the total parts of the Hornet and Wasp engines are identical, and 100 per cent interchangeable. The entire accessory ends of the engines are exactly alike, including even the mounting flange, so that Wasp and Hornet engines can even be interchanged readily in the same type of airplane.

Insofar as detailed design is concerned, except that certain parts are larger in the case of the Hornet, there is no difference. All of the exclusive features of the Wasp, including the solid big end master rod, the built-up crankshaft, the forged aluminum main crankcase section, the enclosed valve mechanism, etc., etc., are all found in the Hornet design.

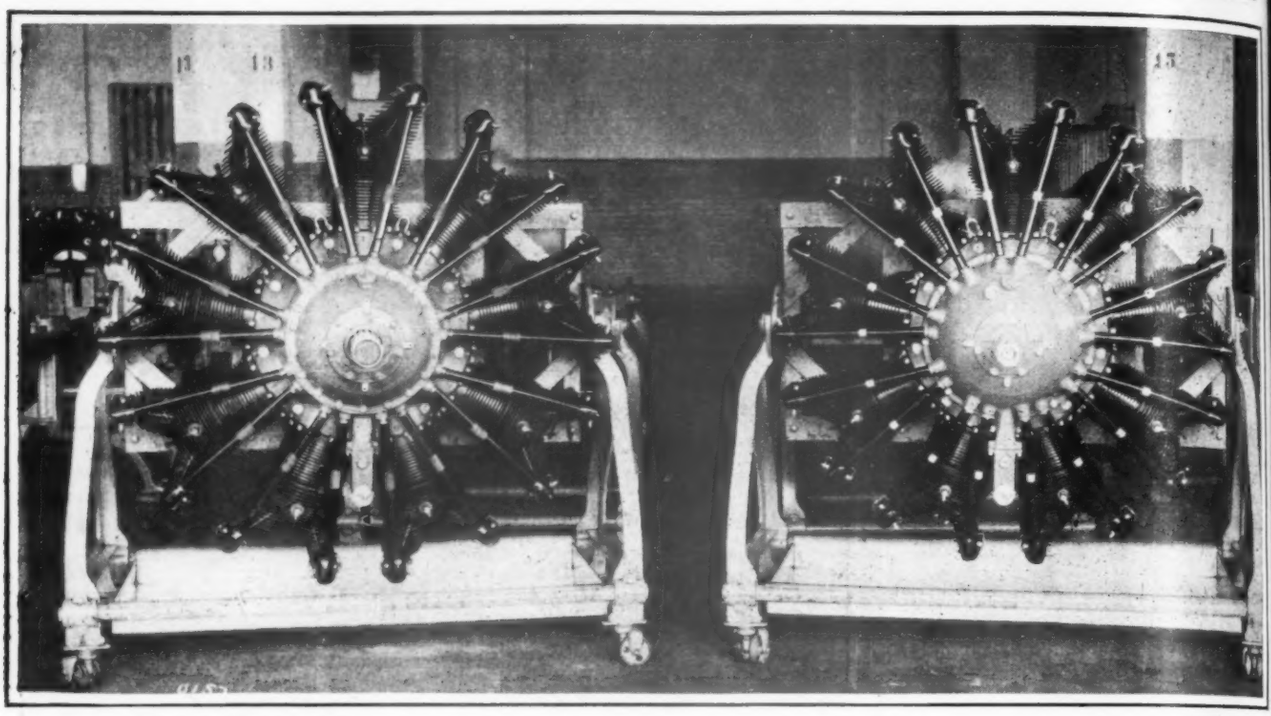
The diameter of the Wasp engine is about 50 in., as against about 53 in. for the Hornet. The Wasp weighs less than 650 lb., and the Hornet less than 750 lb. The over-all length of the Wasp engine is approximately 43⅜ in., while in the case of the Hornet it is 44⅝ in. All of these figures are approximately in line, as the Hornet engine is roughly 25 per cent greater in displacement than the Wasp.

Test Details

The Wasp engine is rated in service at 425 hp. at 1,900 r.p.m. The initial rating for flight service of the Hornet direct drive engine has been placed at 525 hp. at 1,900 r.p.m., The fifty-hour test referred to above was run on a rating of 525 hp. at 1900 r.p.m., although it is a fact that during the final five hours of the fifty-hour test the power rating was 568 hp. at 1920 r.p m. Upon the completion of the formal fifty hour period the engine was then run for three hours at approximately 2200 r.p.m. As can be seen from the above facts the 525 hp. rating at 1900 r.p.m. is equivalent to a mean effective pressure of 130 lb. per sq. in., while the power developed during the final five-hour period indicates a mean effective pressure of 139 lb. The compression ratio of the Hornet is 5¼ to 1, so that the engine may be operated on straight aviation gasoline without detonation, or the employment of a doped fuel, which is not permitted in standard Navy service.

On the basis of its maximum power output at 1,900 r.p.m., the weight per horsepower of the Hornet engine is 1.28 lb. Naturally, this figure is not only for the engine "dry", but also installed in the airplane, as the air-cooled engine does not require a lot of additional installed weight of water, radiator, etc., as in the case of water-cooled types. It has been found in flight service that the Wasp engine cools so well that no oil cooler is required.

The first experimental Hornet engines are now being fitted in planes, and will shortly be in the air. The plane designers as well as the Navy Department, are expecting a considerable improvement through the use of the large radial air-cooled engine. Obviously, in the weight-carrying planes weight saving is of prime importance. Every pound saved results



The Pratt & Whitney Horret (left) and Wasp engines showing the striking similarity in design. The somewhat larger size of the former will be seen.

in ability to carry proportionately larger bombs or torpedoes.

Now that their second type of engine is emerging from the experimental development class, it is interesting to review the development and present activities of the Pratt & Whitney Aircraft Company. It was less than two years ago—to be exact, in August, 1925,—that the Pratt & Whitney Aircraft Company was organized and began its activities. Within about five months from this date the first experimental Wasp was placed upon formal test, which it completed most successfully. Within several months following the test, additional experimental engines were constructed, and these were placed in the air in single-seater Navy fighters,—the Boeing and Curtiss planes. Then followed a long series of tests. As a result of these tests, which continued through the Spring and Summer of 1926, the Navy Department announced its conclusion to adopt the air-cooled radial for its single and two-place fighting planes. Their decision was based not only upon comparative performance characteristics, but because of the inherent simplicity of the radial air-cooled type of engine. As a direct result of this decision, an order for 200 Wasp engines was given to the Pratt & Whitney Aircraft Company.

In August, 1925, all of the activities of the Pratt & Whitney Aircraft Company were confined to a small corner of the present manufacturing building where engineering offices, as well as an experimental shop, occupied not more than 2,000 sq. ft. of floor space. The expansion from that time forward was rapid. The small experimental shop capable of producing only the first engine was enlarged so as to produce the twelve experimental Wasp engines which were constructed. So great was the confidence of the company in its Wasp engine that during the Summer of 1926, the equipment of

A typical bay in the machine shop of the Pratt & Whitney Aircraft Company where Wasps and Hornet engines are built.

their plant for the production of Wasp engines in quantity was installed. This applied not only to the installation of machine tools, test equipment and other necessary manufacturing facilities, but even the special tools, jigs, and fixtures were procured. As a result of this foresight, while the contract for the 200 Wasp engines was signed in early October, nevertheless, during December, six production Wasp engines were delivered, the first of which completed a successful fifty-hour test. In January, twelve engines were completed and shipped, then fifteen in February, and, finally, in March the normal schedule of twenty Wasp engines per month was actually met.

The operations of the Pratt & Whitney Aircraft Company now extend throughout all floors of the building. The basement is used for rough store of bar stock, forgings, castings, etc. The first floor is given over to engineering, general offices, etc., although a part of it is used as the receiving and shipping department, and inspection of incoming material. The second floor is now given over to the assembly of engines, Government and plant inspection, tool stores, and experimental and tool shop. The third floor is entirely occupied by machine shop. The fourth floor is partially equipped with machinery at this time, and present plans call for completely equipping this floor as a machine shop. All of the machine tool equipment, as well as all other manufacturing facilities, are entirely new, and of the very finest type.

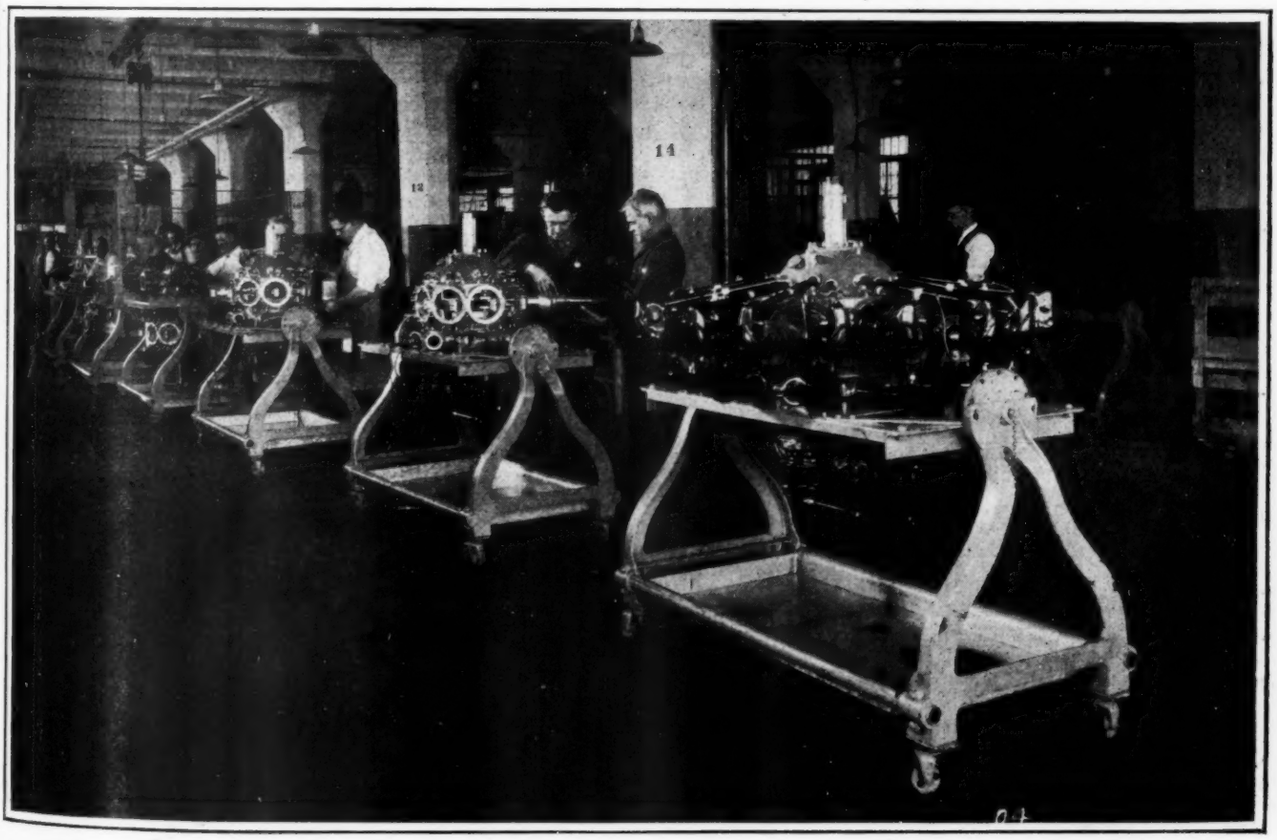
Research Facilities

The Aircraft Company, which is an entirely separate and distinct company from the Pratt & Whitney Company, manufactures all of the important and major parts of its product. Certain small parts not made directly by the Aircraft Company are purchased from Pratt & Whitney. These parts include threaded pieces, as well as many of the other miscellaneous smaller parts. In the case of these parts, the equipment of the Pratt & Whitney Company is utilized to extremely good advantage. The splendid laboratory, metallurgical and heat-treating facilities of the Pratt & Whitney Company are also completely employed by the Aircraft Company, thus making available facilities which, for the smaller company, would be out of line and impossible. The equipment for testing engines is of unusual interest. The manufacturing plant is located in the very center of the city of Hartford. In spite of this, there are at present seven test houses, and it has been found possible to operate all of these at the same time, if necessary, and still thoroughly control the resulting noise. This is accomplished through a complete muffling of the exhaust during test, and the unique construction of the test houses which throws straight up the noise from the propeller. Four test houses are available for the testing of production engines, leaving one test house for the experimental testing of Wasp engines, and one for the experimental testing of Hornet engines. The seventh test house is employed solely for research purposes. It is equipped with a dynamometer, and provides for the testing of single-cylinder test engines, of either the Wasp or Hornet type.

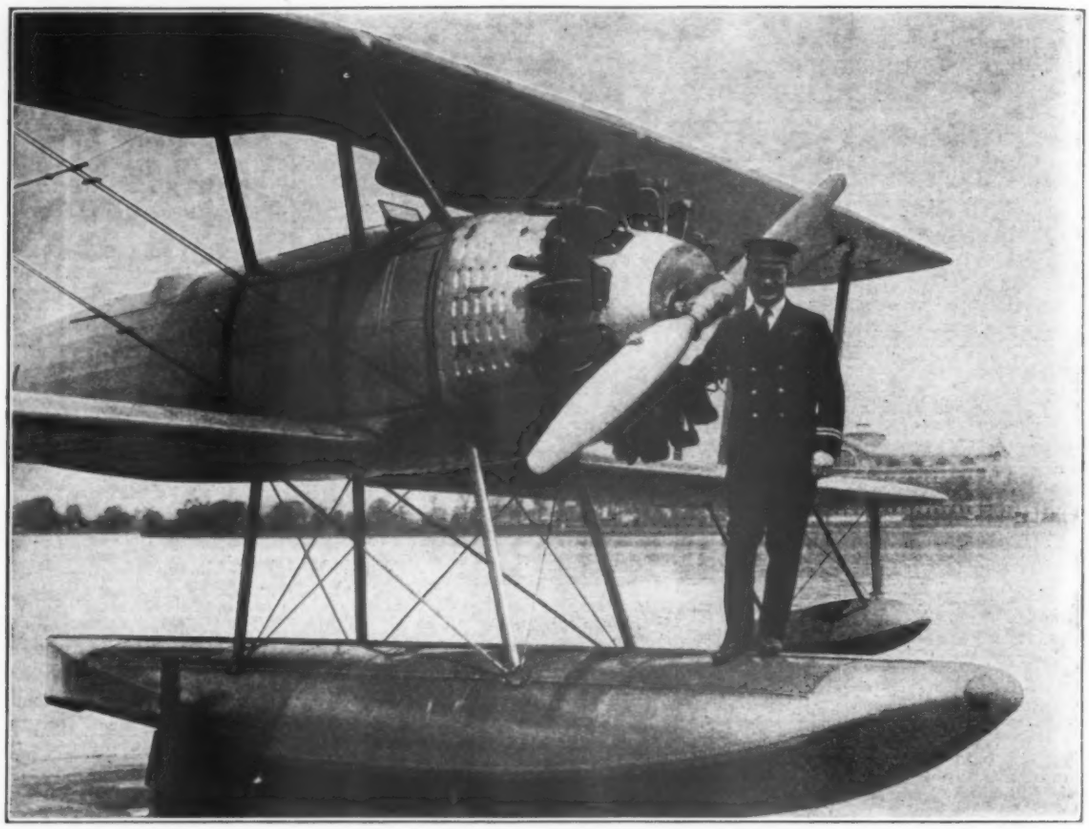
Helium From Hydrogen

A report from Berlin states that two scientists working in the Chemical Institute of the Berlin University have succeeded in changing hydrogen, which is the lightest of all elements, into gaseous helium, which is the next lightest. The transmutation of hydrogen into helium took place by means of what is known as a catalytic process. Palladium, a metal not unlike platinum, was selected as the catalytic agent. When hydrogen was subjected for a few days to the influence of finely distributed palladium, it was found that helium resulted in small quantities.

If the report is accurate, this significance of the experiments is far-reaching. It will be the first time that anyone has observed the development of a heavier atom from a lighter one. Whether or not it has any aeronautical significance is, however, somewhat vague.



A corner of the main assembly floor of the Pratt & Whitney Aircraft Company. The "mobile" beds upon which the engines are assembled are of interest



LT. G. R. HENDERSON, U. S. N., AND THE NAVY VOUGHT "CORSAIR" WITH "WASP" ENGINE.

A New World's Record with a "WASP" Engine.

With no unusual preparation, and in the course of its standard service test, Lieutenant Henderson established a new world's altitude record for sea-planes with a Navy Vought two-place Observation Fighter. The "Wasp" engine was not super-charged, and was a standard service type in every detail.

This remarkable performance is the natural result of superior plane and eng ne design, and skillful piloting. Again the Navy gives substantial proof that its flying officers and service equipment are second to none.

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THE NEW CURTISS "SEA HAWK" AND BOEING "FIGHTER"
BOTH "WASP" EQUIPPED.

New Navy Shipboard Fighters.

Competitive performance trials now in process at the Naval Air Station at Anacostia indicate a very superior performance to present service types.

These new planes are designed around the "Wasp," and it may safely be said that they will establish a new era in Naval aviation.

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DEPENDABLE ENGINES

The New Hamilton All-Metal Airplane

The Latest Product of the Hamilton Metalplane Company. A Four-Passenger All-Metal Monoplane

THE HAMILTON METALPLANE COMPANY, of Milwaukee, Wis., has just completed the construction of a very interesting combination passenger and mail plane of all-metal construction throughout. The cabin, which is very commodious seats four passengers, whose view of the country over which they are traveling is greatly enhanced by the somewhat novel window arrangement provided. Owing to the depth of the cantilever wing, the roots of which cover a wide proportion of the side of the fuselage at the cabin, windows are provided in the lower surface of the wing stubs instead of in the side of the fuselage. At the point where these horizontal windows meet the side of the fuselage, an arm rest is provided giving the passengers elbow room not found in many cabin types of plane.

Access to the cabin is through a door in the left side of the fuselage and head room when entering is arranged for by having one of the wing windows to fold up. The pilot sits ahead of the passengers in an adjoining cockpit which is covered with a streamline transparent fairing from which he has an excellent view. The pilot's cockpit has an individual entrance. In the rear of the passengers cabin is a baggage compartment with a capacity of 70 cu. ft.

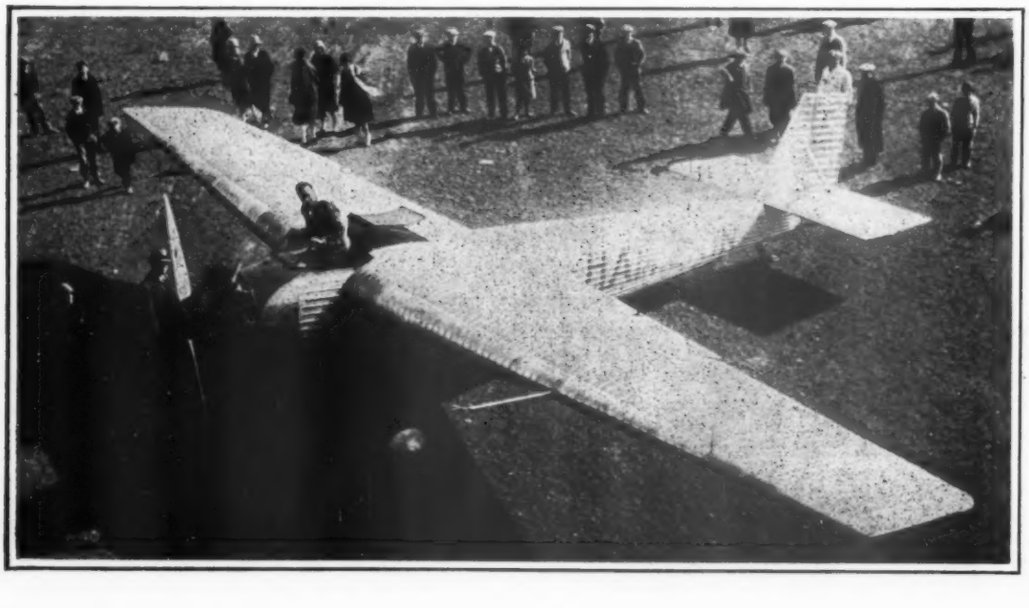
Metal Fuselage

The entire fuselage is metal covered and is of elliptical cross-section which not only makes for strength of contsruction but greatly reduces the head resistance. The entire tail unit is metal covered and braced externally with steel tubing. The stabilizer is adjustable in flight and the elevator operating horn or king post, is concealed inside the vertical fin which, also, is adjustable in flight. All control wires are carried inside the fuselage with the exception of a few feet leading to the rudder and ailerons.

The wings, which are full cantilevers and tapered in plan form and in thickness, are of a modified N.A.C.A. high lift section. The construction of the wings includes three metal wing beams of very considerable strength individually. The two wings are attached to the fuselage by means of six large chrome-vanadium steel bolts having a factor of safety of over twenty.

The Hamilton Metalplane showing the undercarriage construction and the observation windows for the passengers.

Two forty gallon gasoline tanks are located in the wings providing gravity feed to the engine. The landing gear is of the normal split axle type with the compression strut running directly up to the wing stub and fitted with compression rubber shock absorbers. The wheels are 32 x 6 in. fitted with Goodyear tires and Sauzedde brakes. The undercarriage tread is nine feet.



A general view of the Hamilton Metalplane (Wright Whirlwind engine) showing the method of opening the top of the pilot's cockpit.

B. B. T.

FLOODLIGHTS AND BEACONS

ARE THE

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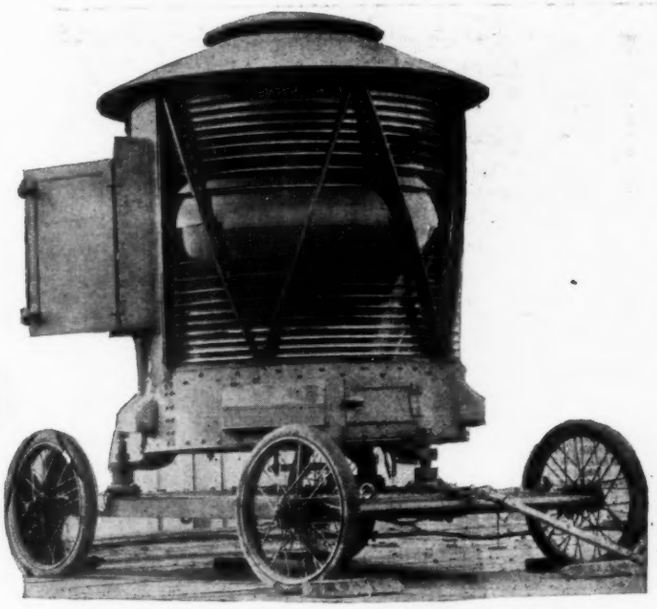

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Maywood, Illinois.
Moline, Illinois.
Mt. Clemens, Michigan.
New Brunswick, N. J.
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Oklahoma City, Okla.
Omaha, Nebraska.
Philadelphia, Pa.
Quantico, Virginia.
Salt Lake City, Utah.
San Diego, Calif.

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Buenos Aires, Argentina.
Brussels, Belgium.
Kbely, Czechoslovakia.
Reval, Esthonia.
Amsterdam, Holland.
Kootwictk, Holland.
Rotterdam, Holland.
Scheveningue, Holland.
Osaka, Japan.
Tokio, Japan.
Belgrade, Jugoslavia.
Warsaw, Poland.
Bale Birsfelder, Switzerland.
Oran, Algeria.
Casablanca, Morocco.
Abbeville, France.
Avignon, France.
Berck, France.
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Beauvais, France.
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Lyon, France.
Macon, France.
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Maubeuge, France.
Montelimar, France.
Mulhouse, France.
Nancy, France.
Nimes, France.
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Perpignan, France.
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Sarrebourg, France.
Saint Dizier, France.
Strasbourg, France.
Saint Rambert, France.
Saint Inglevert, France.
Saint Quentin, France.
Toulouser, France.
Valenciennes, France.
Constantinople, Turkey.
Smyrna, Turkey.
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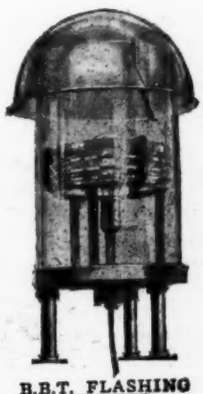


B.B.T. FLASHING BEACON

A general view in one of the shops of the Hamilton company where all-metal (duralumin) pontoons are constructed.

The engine, a Wright Whirlwind, is mounted on a built up metal engine mount of very rigid construction. An Eclipse Inertia engine starter and Pioneer instruments are standard equipment together with a Hamilton propeller either of wood or of metal construction.

General Details

The general details of the plane are as follows:

Span	48 ft. 5 in.
Length	31 ft. 5 in.
Height	8 ft. 3 in.
Weight empty	1856 lb.

The wings can be removed in twenty minutes without difficulty and the entire plane stored in a space 12 ft. wide and 32 ft. long.

The Hamilton Metalplane has been thoroughly flight tested by Lieut. Victor E. Bertrandis, formerly operations manager of the P.R.T. Air Service, who pronounced the machine very stable in flight and easy on the controls. The performance of the plane, as indicated by the air speed indicator, which is, of course, subject to accurate checking, is as follows:

Maximum speed	120 m.p.h.
Cruising speed	100 m.p.h.
Landing speed	48 m.p.h.

A load of 1200 lb. in addition to gasoline and oil was carried on this test and the take off was remarkably quick.

It is understood that the Hamilton Metalplane is being placed on the market at once for summer deliveries.

It will be recalled that the Hamilton company (The Hamilton Aero Manufacturing Co.) also manufacture, in addition to both wood and metal propellers, duralumin pontoons which have proved extremely successful fitted to several types of commercial aircraft.

New Eaglerock Agents

Approved type certificates have been received from the Aeronautics Branch, Department of Commerce, Washington for both combination and long wing Eaglerocks. These certificates confirm enthusiasts' previous faith in the safe construction of the plane.

Willis E. Kysor, of the Alexander Aircraft Company, has made what is believed to be a record for long distance delivery of the airplanes over a period of two weeks. Kysor delivered an Eaglerock to the T. D. S. Aerial Service, New York City, hurried back to Denver and delivered one to the Southwest Airplane Sales Company, Oklahoma, returned again to this city and delivered one to Concord, Mich.

W. L. Lamkin, has sold his franchise for Northern California, with the Alexander Aircraft Company's consent, to James L. Mayberry of Fresno. Mr. Mayberry is a Drive-Yourself Auto man and will combine aerial and auto taxi service. This new dealer bought Lamkin's plane and has brought one other new Eaglerock from the Denver factory.

Bill Gorman and A. J. Murray, both pilots, have purchased a demonstrator Eaglerock from the Oklahoma dealer and have taken a sub-dealership in Northeastern Oklahoma. Arthur Kellog another Alexander pilot expects to leave Denver in a day or so to join them.

James S. Charles dealer in Northern Carolina and Virginia has been awarded additional territory, the District of Columbia.

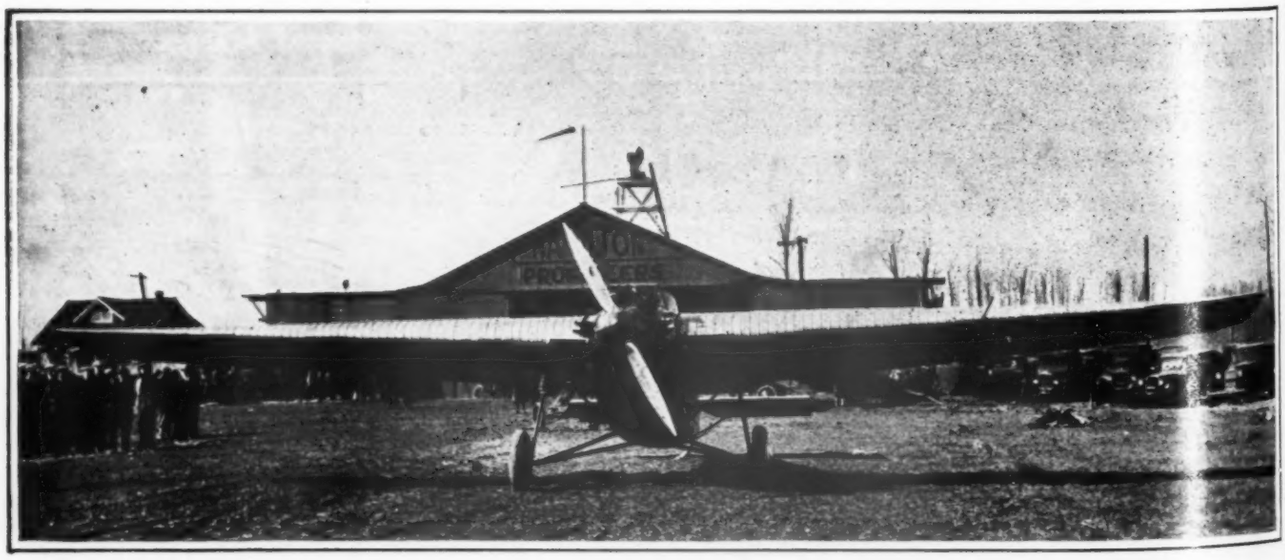
Aero Engine Performance

Sir Samuel Hoare, British Secretary of State for Air, recently referred, in the House of Commons, to the aircraft reliability of modern engines, saying that some types now run 250 hr. before it is necessary to have them overhauled.

The Napier Lion engine is a type which by its reliability has enabled such efficiency to be attained, that it is not necessary to take a Napier Lion down before it has run 250 hr.—approximately 25,000 mi.—and then it is more as a precaution than because there is any need for work to be done to the engine.

Some Napier engines in use by the British Royal Air Force have been in service for over 400 hr. without being dismantled.

On commercial service Imperial Airways run a number of Napier Lion engines. These invariably run for 300 hr.—approximately 30,000 mi.—before it is considered necessary to look at them to see if any work is required to be done.



A front view of the Hamilton Metalplane, a high wing cantilever monoplane with cabin accommodation for four passengers. The engine is a 200 hp. Wright Whirlwind.

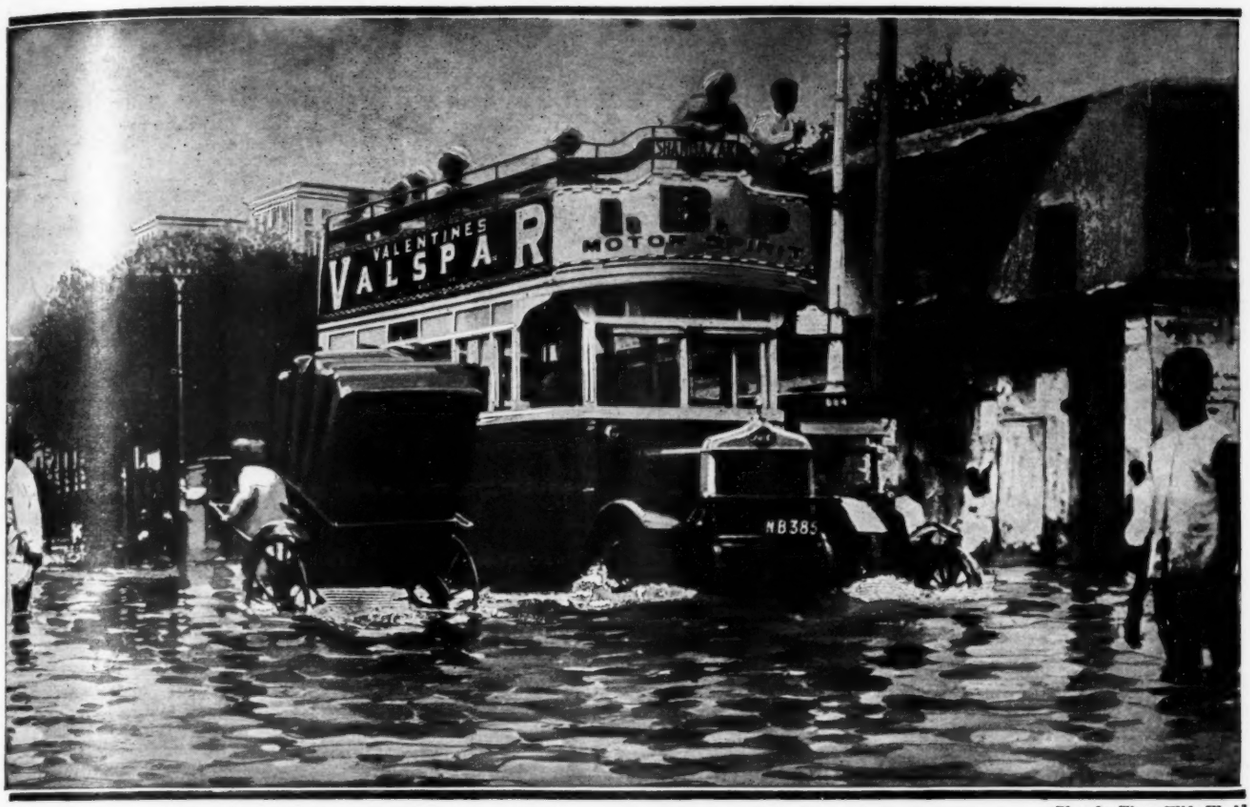


Photo by Times Wide World

You can't "drown" *Valspar!*

DURING the recent floods in India, Valspar again demonstrated its wonderful waterproof qualities for which it is famous the world over. For hours at a time the Valsparred buses of Calcutta had to plow through the flooded streets, but when the water and mud were wiped away, the Valspar finish always came up smiling!

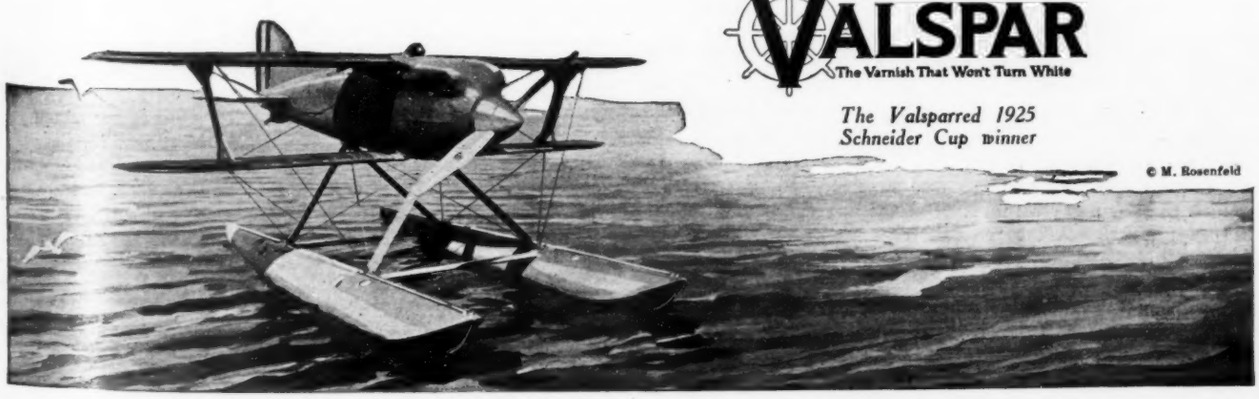
Because Valspar is so remarkably waterproof and durable, it is the one varnish that is universally used to protect surfaces exposed to water, weather and hard wear. On airplanes of all kinds it has met with such widespread favor that now it is known the world over as the standard varnish for airplane use.

In the aviation service, Valspar has proven many times its remarkable ability to "stand the gaff." Valspar protected the NC-4, the "Round-the-World" planes, Commander Byrd's North Pole Fokker and dozens of other famous planes, not to mention the many hundreds of planes in daily service.

Nitro-Valspar—the all-lacquer finish

As a companion to Valspar, Valentine & Company offer Nitro-Valspar, the all-lacquer airplane finish. To be sure of satisfaction use Nitro-Valspar if you want lacquer, and Valspar if you want varnish. Each is the most durable and economical finish of its type in use today.

VALENTINE'S
VALSPAR
The Varnish That Won't Turn White



The Valsparred 1925 Schneider Cup winner

© M. Rosenfeld

Stinson Produces Five-Place Cabin Monoplane

Whirlwind Engined Cabin Monoplane Machine Bears Striking Resemblance to Cabin Biplane

WHAT WILL undoubtedly prove one of the most interesting exhibits at the All-American Aircraft Show of 1927, to be held in Washington beginning May 2, is the experimental monoplane being shown by the Stinson Aircraft Corporation, of Detroit. The fuselage of the plane is modeled after the Stinson biplane, the Detroiter, with the exception of the cabin, which, in the Deroiter, is upholstered in leather, with seats arranged like those of an automobile. The new plane is to be fitted with wicker chairs, Kapac cushions, and arranged so that five people, instead of four, with baggage, may be carried.

Like the biplane, it will be a dual control machine. The foot brakes have been replaced with air brakes, the first ever to be used on airplanes. Also, the first air starter to be placed on an airplane has been introduced in the new Stinson plane. This is known as the high pressure injector starter and has been developed by the Detroit Air Appliance Corporation.

One of the important features of the machine, however, is the new airfoil employed. This is designed to give a slow landing speed, at the same time maintaining a high maximum speed in the air. The plane will be powered, as is the Detroiter, with a Wright 200 hp. Whirlwind engine. It is expected to attain a top speed of 130 m.p.h., with a possible cruising speed of 115 m.p.h.

Nearly all the controls will be tube operated. The plane will have a wing span of 45 ft., with a wing area of 219 sq. ft. Stinson has indicated that all his future planes will have the air starter, air brakes and tube control as standard equipment.

The Stinson five-place cabin monoplane (Wright Whirlwind engine)

The Cabin Plane

By David L. Pehncke.

In the early days of flying, it was customary to seat the pilot as much in the open as possible. In the infancy of the art of aviation, it was perhaps a good idea, because of the general lack of knowledge and experience. In the popular mind at that time most accidents were attributed to air pockets and by seating the pilot directly in front of the engine, it was thought his advantages were the best. About the only thing achieved by this seating arrangement was unlimited vision, but it provided no protection from accident and exposed the pilot to all kinds of weather.

Progress has changed this and designers now place the pilot further in the rear, enclosing him in a cockpit fitted with a windshield, with head and shoulders only exposed. For military purposes, the cockpit arrangement is ideal. It provides limited protection from the weather and excessive speeds and gives a degree of vision to the pilot which is only limited by other factors.

But in commercial flying, weather protection is absolutely necessary. Yet it is easy to appreciate the dislike of many pilots for the cabin plane.

I dreaded the day when I was supposed to go to Detroit and bring back a cabin plane. But the day came and I started on my mission. After several trips around the field with Eddie Stinson, I took off for Minneapolis, through Chicago, Milwaukee, La Crosse and St. Paul. I carried a full load and needless to say was very worried. Things seemed so strange and different. Instead of the bang and the noise of a racing engine, there was quiet. The rush of air was also missing. In short, my passengers, as well as myself, were really comfortable while flying.

After several trips on the air mail run between the Twin Cities and Chicago, I became accustomed to being enclosed while flying.

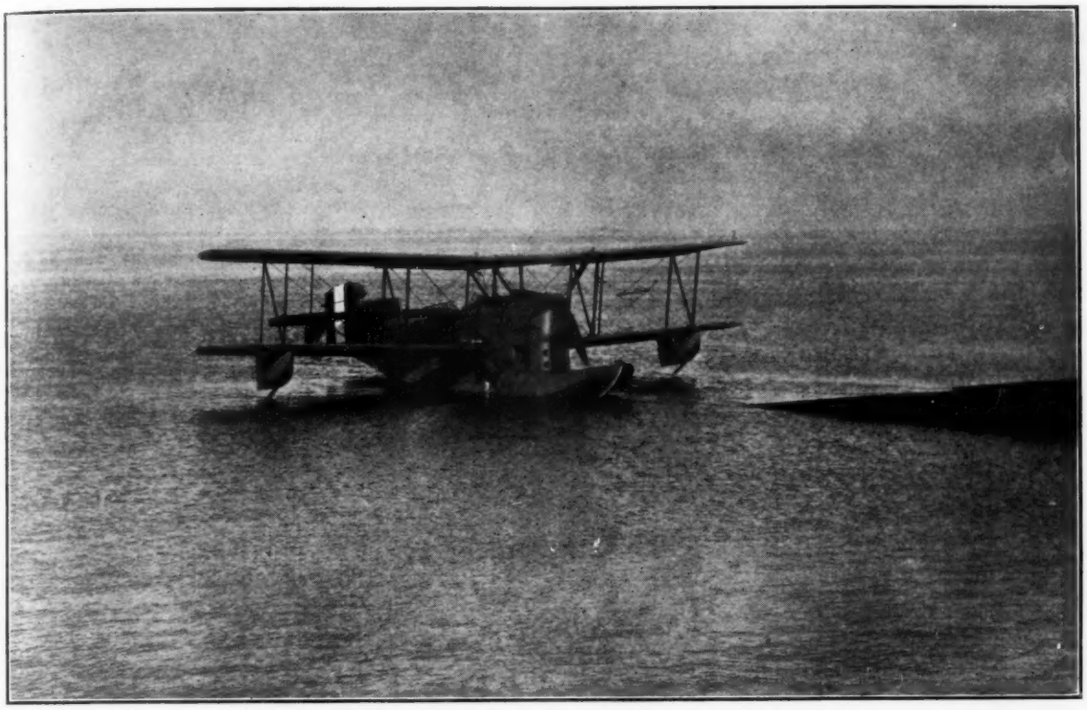
A properly designed cabin plane, with the pilot correctly seated, should give more vision to the front and downward than the old style cockpit arrangement. Vision to the back and upward is not really necessary in a commercial plane. In a military plane it is just as important to be able to look directly backward as it is to see forward.

To be able to climb into your plane dressed just as you would be for a spin in your motor car is also an essential of private flying. There are no binding helmets or goggles to bother.

Another and very important consideration is the fact that it is going to be very much easier to sell the public on the idea of the cabin plane. Flying in the open, in the face of the propeller blast, the roar of a high-powered engine, the discomfort from oil and bad weather, are facts not likely to attract purchasers who desire to fly with a maximum of comfort.

Designers should remember that the enclosed passenger cabin should be provided with the same protection devices as the cockpit. Life belts should be provided, seats should be fastened down, all sharp parts should be padded and doors should be arranged to open easily, in case of trouble.

The question is often asked if windows fog up and do frost and snow collect on the glass. In the writer's experience he has never had windows fog, nor has he seen instances of frost and snow lodging on the panes. The propeller blast does much to keep the forward glass free from rain and snow.



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The Bellanca Monoplane - Holder of the World Endurance Record

A Detailed Description of the Plane which Remained in the Air Over 51 hr. and Will Attempt the Atlantic

THE REMARKABLE flight of Pilots Chamberlin and Acosta on April 12-14 in the Bellanca monoplane, setting up a new World endurance record for airplanes, has brought this somewhat distinctive Bellanca design again into the limelight and while the machine is not new nor has it been neglected in the columns of AVIATION in the past, nevertheless, a full and complete description of the plane in greater detail than has previously been possible will not be out of place at this time.

Giusseppe M. Bellanca, a designer of international repute, first turned his attentions to the design of the type of cabin monoplane of which the present record breaking machine is a development, in 1921. The very first machine of this type powered also with an air-cooled engine was a marked success, the plane winning thirteen prizes in various airplane events. In 1925, a later model of the same basic type, and built by the Wright Aeronautical Corporation and equipped with a Wright Whirlwind engine, won the highest efficiency prize for commercial planes at the National Air Races at Mitchel Field. In 1926 the Wright Company built a second plane of the same type to Mr. Bellanca's design and it was this identical machine which set up the World endurance flight three weeks ago. This machine won first speed and efficiency honors for commercial planes at the National Air Races at Philadelphia last year and was, in fact, by no means a new machine when the record flight was made, nor was the Whirlwind engine, with which it was fitted, new, having already done well over 200 hr. in that particular plane.

International News Reel

The Bellanca Monoplane (Wright Whirlwind) which set up the new endurance record, flying by the Municipal Building, New York City, N. Y.

Thus, the Bellanca Monoplane is not an experimental design produced especially for record breaking but is a standard model commercial type and is, in fact, that identical machine in which the Wright Company, early this year carried out a test flight to Washington, D. C., from New York City with a full load of five passengers with a view to obtaining a figure of cost of operation for comparison purposes. It will be recalled that most interesting results were obtained.

In the design of the plane, which is a six seater (including the pilot) cabin machine, every provision has been made for maximum safety. The landing speed is very low and the plane has a very good gliding angle, namely, 12½:1, and the control at low speeds is very good. The pilot's vision is wide and unobstructed and considerable attention has been given to the reduction of the fire hazard.

The wing construction is simple and conventional. The two spars are of spruce, solid "I" beam section. The ribs are of spruce, bass wood and balsa, with triangular braces, making a very strong and light combination. This type of rib has been tested to over 800 lb. before breaking. For a load factor of 7 only 375 lb. test load is required. Their weight is 12 oz. each. All the wing ribs are identical with the exception of two, namely, the wing tip ribs which, one on each side, taper towards the tip cap-strip. The wing covering is fabric, treated with seven coats of dope and one of Valspar. The two halves of the wing are pin jointed to the fuselage top longerons at a section of the fuselage which is faired to the wing section.

The wing is braced externally by the well-known Bellanca struts, two on each side, extending from the lower fuselage longeron to a point about two-thirds of the semi-span from the wing roots. These struts are formed in the section of an airfoil of medium lift low drag contour. The use of these struts simplifies the wing construction and obviates tapering the monoplane wing. Their resistance is no more than the more normal type of strut of wire bracing in a biplane, while their lift more than compensates for their weight. Furthermore, their marked dihedral adds considerably to the lateral stability of the machine. It is claimed that the stabilizing effect of these struts increases controllability at low speeds and stalling angles. The load factor of the Bellanca struts is 10. They are constructed of straight grained spruce "I" beam section and of spruce and bass wood ribs. The leading edges are made of plywood and spruce while the covering is fabric treated with seven coats of dope and one of Valspar, as in the case of the wings.

The fuselage is constructed in three complete and separate units, the engine section, the cabin section and the tail section. The convenience of this arrangement is that each section can be replaced in a very short time without the major expense of a complete knock-down.

The tubular chrome-molybdenum steel engine mount is hinged to the fuselage so that it, together with the oil tank and cowling, may swing out and can be detached readily. The entire mounting carrying the Whirlwind engine weighs only 13½ lb. Between the engine mounting and the engine is a duralumin firewall which carries the cowl of the engine.

The cabin section and also the tail section, which together make up the entire fuselage, are constructed of chrome-molybdenum steel tubing with the simplest form of fittings with a view to reducing cost of maintenance. The cabin has seats for five passengers in addition to the pilot and entrance is made through a wide door. Vision from the cabin, both for the pilot and the passengers, is perfect, as may readily be realized when it is noted that the cabin is surrounded by windows and the high position of the wing leaves an entirely un-

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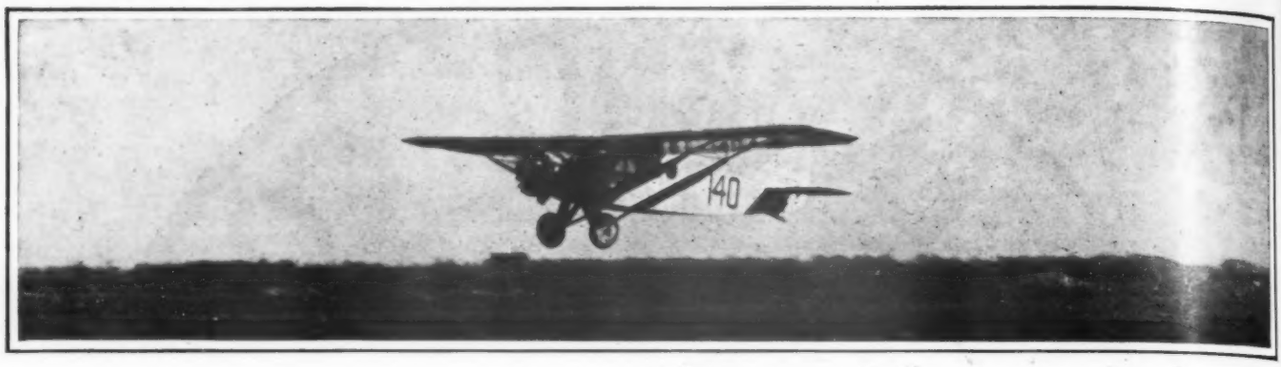


The Bellanca Monoplane (Wright Whirlwind J-5, 200 hp.)

obstructed view down with the exception of the very minor blind spots caused by the presence of the bracing struts. The chairs in the cabin are comfortably upholstered.

The total space in the cabin is 140 cu. ft. not including that devoted to the pilot which would indicate that the machine is well suited to mail and freight transport by air.

The tail section of the fuselage, of chrome-molybdenum steel tube as already mentioned, is attached to the cabin section by means of four pins. The tail unit, including fin and rudder, is constructed of spruce, bass wood and ash, covered with fabric doped and varnished. The elevators are unbalanced, while the rudder, of ample size, is balanced. The undercarriage is of the split axle type although the streamline "trousers" which characterized the 1925 machine have been eliminated. The tail skid, of birch, is located entirely outside the fuselage and can, therefore, be readily detached and replaced.

The gasoline tanks, two in number, are located one in each wing root, with a total capacity of 64 gal. These tanks are constructed of welded sheet aluminum and the feed is, of course, of the gravity type. As reported last week in AVIATION, for the record flight an additional tank was located in the cabin with a pump feed up to the wing tanks. The gasoline lines are of copper tubing and are located with a view to their being easily accessible. With the 5 gal. oil tank in the engine section, gravity fuel feed, and no water at all, the plumbing is brought to a minimum.

The general details of the plane are:

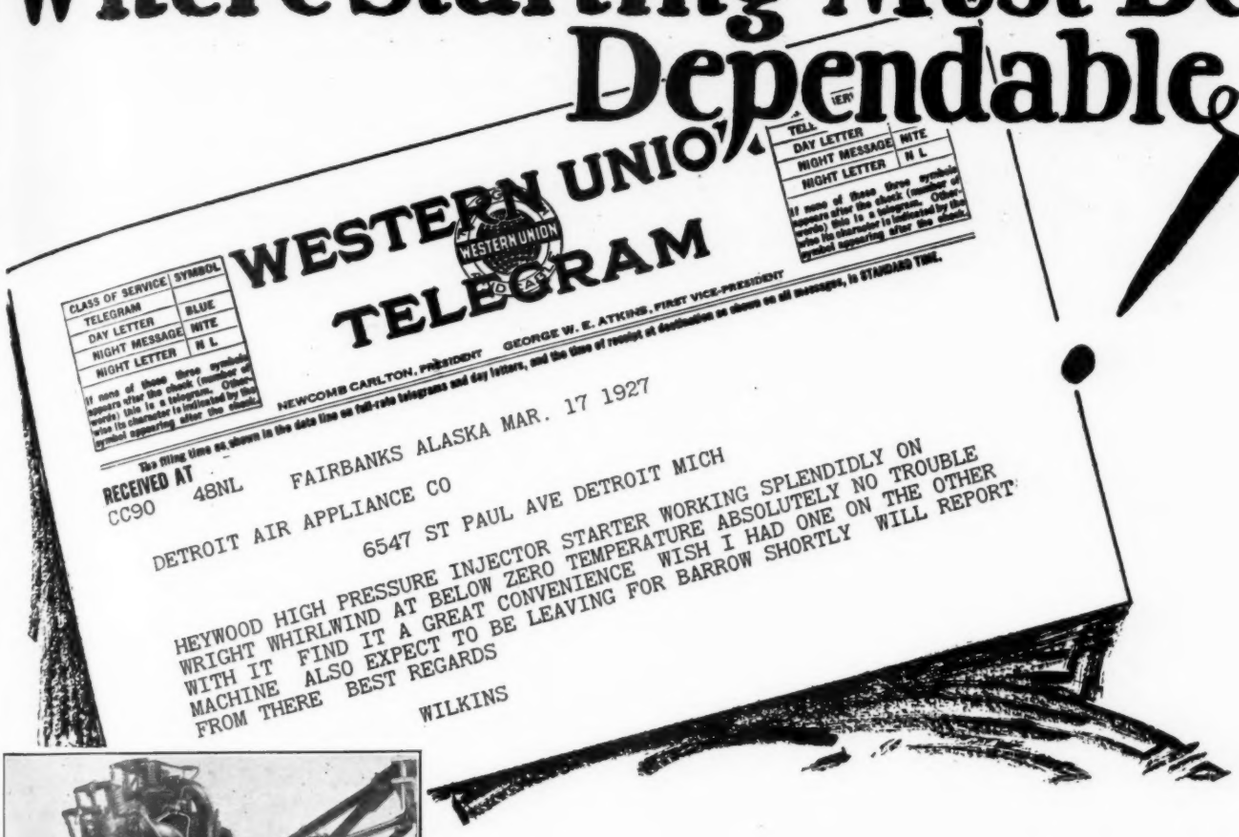
Span	46 ft. 6 in.
Length	26 ft. 9 in.
Height	8 ft. 9 in.
Wing Chord	6 ft. 7 in.
Wing area	272 sq. ft.
Weight empty	1850 lb.
Weight of pay load	1025 lb.
Weight loaded	3454 lb.
Weight per horsepower	17.2 lb.
Weight per square foot	12.7 lb.

The following performance data, supplied by the manufacturer, was taken with pilot, five passengers, averaging 175 lb. each, and 150 lb. of baggage. The tanks were full. The total weight of the pay load was 1025 lb.:

High speed (1800 r.p.m.)	130 m.p.h.
Cruising speed (1750 r.p.m.)	110 m.p.h.
Horsepower of Whirlwind at 110 m.p.h.	125 hp.
Fuel consumption at 110 m.p.h.	11 gal. p.hr.
	which indicates 10 miles per gal.
Landing speed	47 m.p.h.
Rate of climb	930 ft. in 1 min.
	5000 ft. in 7½ min.

A close up of the Bellanca Monoplane (Whirlwind) during fueling for the endurance flight.

Where Starting Must Be Dependable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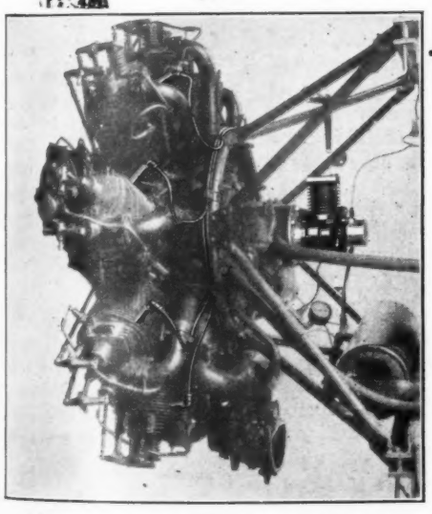
HEYWOOD HIGH PRESSURE INJECTOR STARTER WORKING SPLENDIDLY ON WRIGHT WHIRLWIND AT BELOW ZERO TEMPERATURE ABSOLUTELY NO TROUBLE WITH IT FIND IT A GREAT CONVENIENCE WISH I HAD ONE ON THE OTHER MACHINE ALSO EXPECT TO BE LEAVING FOR BARROW SHORTLY WILL REPORT FROM THERE BEST REGARDS
WILKINS



Showing installation of Heywood High Pressure Injector Starter on Wright Whirlwind Motor. Weight 25 lbs.

Pilots, whether in arctic cold or tropic heat, know the absolute necessity of dependable starting.

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The Airport—A Municipal Stepchild

Western Municipalities Take Cognizance of Growth of Commercial Aviation And Plan Airport Projects Aggregating Approximately $8,000,000

FOR YEARS the airport has been the stepchild of the municipal family, neglected, dreary and forlorn, while attention has been lavished upon those promising twins, Railroads and Shipping. Nobody cared much about it except a chosen and enthusiastic few, whom the rest of the community called "nutty." Nothing that anybody else could use was permitted to be occupied by it. Any old space that nobody wanted, or thought they might want in future, was good enough for it. Even today there is no western city able to boast a first class airport and one, at least, has a field that is downright dangerous.

But now the stepchild has been named in old Uncle Prosperity's will and the rest of the relatives cannot do enough for him. In fact, he seems likely to become the pride of the family. It used to be that whatever rutty field was not needed for some more sensible purpose was plenty good enough for those lazy youngsters to go waste their time in, trying to make some fool contraption fly, but not any more. Seven western cities have projected or are embarked upon airport projects representing an investment of approximately $8,000,000 and this is typical. Other communities are doing or have done as well, proportionately.

Millions Spent on Airports

Indeed, it seems that within the year a wave of interest in aircraft and aircraft operation has swept over the entire Pacific coast region, with the result that Portland has almost completed a $1,250,000 airport; San Francisco has spent nearly $100,000 in leasing and improving a temporary field and is committed to building a permanent field at a cost approaching $1,000,000 more; Oakland has committed itself to the expenditure of $650,000 for raw land on which to build an airport; Fresno was to vote in April on a bond issue for acquiring a site which now is used under lease; Santa Monica has spent $860,000 for a site; San Diego has plans for an $800,000 model airport under way; and in Los Angeles the city council is busily endeavoring to discover a site on which to build an airport that will cost, it is estimated by members of the council's airport committee, $3,000,000 to $3,500,000. It is just possible that this site will be chosen and a bond issue be voted upon by the people at the municipal election in May.

Along with these major projects should be mentioned a few smaller ones where, though no additional expenditures of municipal or county money are contemplated at present, a great deal of preparatory work has been done in recent months. These include the Boise Municipal Airport, representing an investment of between $50,000 and $60,000: Barber Field at Medford, Oregon; the Kern County Airport at Bakersfield; Blanchfield, at Reno; the Pasco airport; and the field at Las Vegas, Nevada. Though the total value of all these enterprises does not aggregate as much as a single one of the larger cities will spend, yet considering the proportionate wealth of these smaller communities it presents a striking evidence of the new attitude toward aviation.

Except Santa Monica, all the fields named are used by the air mail. Indeed, it was the needs of the new contract air mail routes which called most of them into being. Santa Monica's enterprise is a distinctly commercial affair, established by the city government in an effort to make that city, already the home of the Douglas company, a larger aircraft manufacturing center.

In setting up these fields, financial problems of some magnitude have been encountered and solved in almost as many ways as there are fields. Portland's enterprise has been financed and will be carried to completion through the Port of Portland Commission. This body, taking the view that a port was a port, whether for air travel or sea travel, has assumed the function of providing the city with an air harbor in the same manner that its original authority required it to provide the city with docks and wharves for marine commerce. The money for the enterprise has come from dockage fees, rentals of reclaimed land and other revenues of the commission, so that the cost of the airport has been met without taking a penny directly from the pocket of the taxpayer or floating a dollar's worth of bonds.

To Encourage Manufacturers

A somewhat similar plan is contemplated by Oakland, which has just arranged to take over 680 acres on Bay Farm Island as a site for an airport. The two projects have a further point of resemblance in that their proponents hope to have each become a focus for aircraft manufacture. Oakland's plan is not so definitely crystallized as is Portland's however, but, as the northern city's airport must be completed by filling in ground at the edge of the island and the Oakland field is already filled and levelled, it is not so far behind. The Oakland financing, like that of Portland, is to be done out of the earnings of the port.

Medford, Boise and Santa Monica have made their progress in the matter by considering the airport as a part of their park or recreation system, with one difference however—Medford and Boise have utilized recreation land as a site for establishing the air field while Santa Monica has created an assessment district under the California parks and playgrounds act and issued bonds to pay for its land. The assessment district embraced the entire city, so that the bond issue is virtually a city security, but, by proceeding in this manner, the city's limit on bonded indebtedness was not involved. Bond house attorneys approved the plan.

Both Medford and Boise have spent money derived directly from taxes to improve their airports, Boise buying land to the extent of nearly $25,000 as a "park." The remainder of the site had been given the city as a park some time before. The Boise airport has the distinction of being only a mile from the city's business center, the smallest distance of any western air mail field from the city's postoffice.

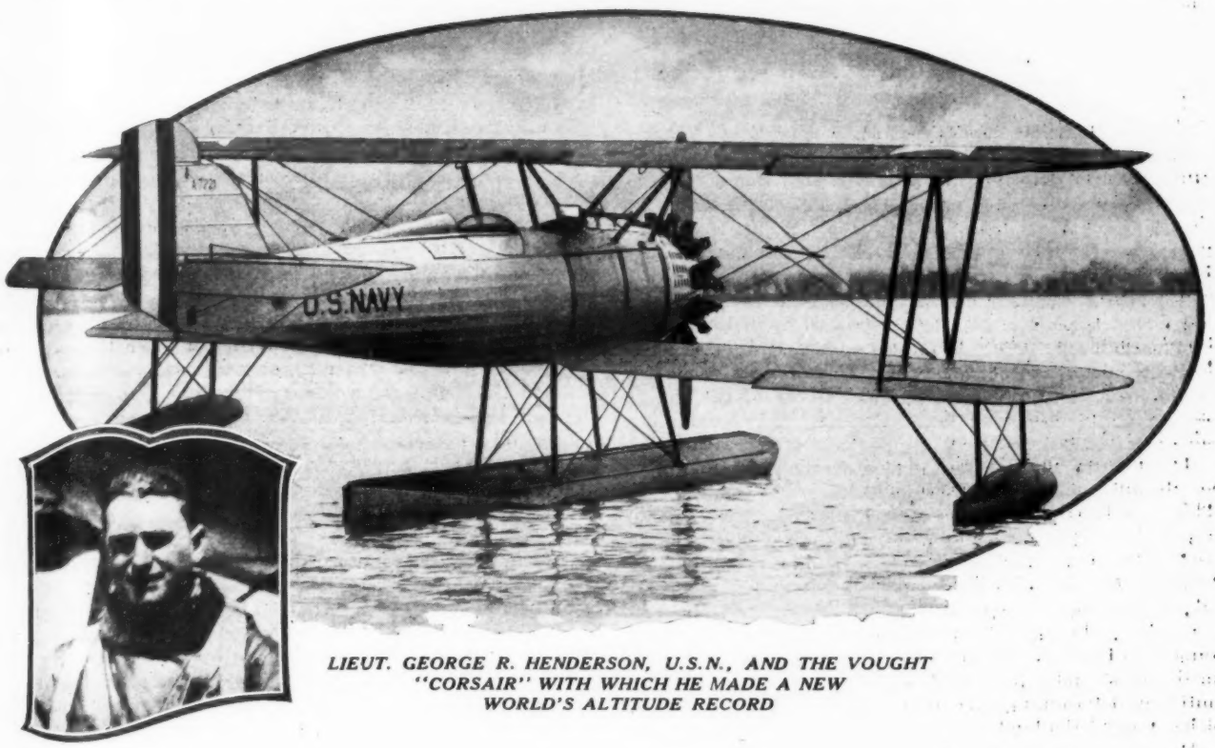
The land utilized at Medford is county property, being the central portion of a racetrack at the county fairgrounds.

The Pasco field is owned by the county, having been taken over on a tax lien. The Bakersfield airport is leased by the county from private owners. The city of Reno and the County of Washoe jointly own the field at Reno. Ryan Field and Vail Field, at Los Angeles, used respectively by the Pacific Air Transport and the Western Air Express, mail contractors, are leased from private parties.

Field Costs Considerable Sum

In only one case, that at Fresno, is any considerable sum paid for the use of a field, either by public body or private contractors. The Fresno Chamber of Commerce has been paying $3,000 a year rental on a field there which is thrown open to public use free. This does not represent the only drain made on private pocketbooks because legal authority to expend money for airports as such is lacking. Business men of several communities, notably at Salt Lake City, have

Altitude Performance



LIEUT. GEORGE R. HENDERSON, U.S.N., AND THE VOUGHT "CORSAIR" WITH WHICH HE MADE A NEW WORLD'S ALTITUDE RECORD

A STANDARD "Corsair" Service Seaplane, piloted by Lieut. George R. Henderson, U.S.N., established, on April 14th, a new World's Altitude Record carrying 500 kilograms (1102 pounds).

The official Height attained was 6,760 Meters or 22,178 feet.

The actual Useful Load carried exceeded 1640 pounds, including pilot, fuel, equipment, etc., and 1102 pounds ballast.

This new Vought has been in active service since last October, and made its record breaking flight as a fitting climax to the successful completion of Official Navy Department Service Tests wherein it had conclusively demonstrated its Superior Performance, Flying Qualities and Suitability.

The Record was made without special preparations, the airplane, engine and propeller being the original service equipment delivered in October, 1926, and used, without changes or modifications, in all flights since.

The "Corsair" is an airplane designed by the competent Vought Engineering Organization, around the P. & W. "Wasp" Engine.

CHANCE VOUGHT CORPORATION

LONG ISLAND CITY, NEW YORK

been called upon to build hangars for contract mail operation. That at Salt Lake City, however, produces $100 a month rent, paid by the Government, which is turned over to the contributors who raised the $17,000 to build the hangar.

The financing of the Los Angeles airport, when it is built, probably will be through a bond issue, in the view of the council airport committee and others interested. Whether, however, this will be a city bond issue or one covering an assessment district, along the plan adopted at Santa Monica, is unsettled.

San Francisco's Problem

How San Francisco's financing is to be done is not yet settled. The preliminary expenditures have all come out of a budget item covered by the tax rate. Indeed, San Francisco apparently is the only city in the West with legal authority to expend money from taxes on an airport. This is because the voters a year ago approved a charter amendment empowering the city to purchase land for such a utility. San Francisco also is the only city, so far as is known, which is making any detailed scientific investigations as to the desirability of various sites before locating its municipal flying field. Local conditions admittedly vary a gread deal on the San Francisco peninsula and the airport committee of the supervisors, the city's governing body, had so many conflicting statements presented to it by proponents of nine different sites that the investigation was deemed a necessity.

The inquiry includes the placing of recording instruments at all nine of the proposed sites by the Weather Bureau. The records from these instruments will be used as a basis a year hence for determining the meteorological conditions of each. The inquiry also includes test flights and landings to be made over the sites thrice weekly by Air Corps fliers. The city is bearing the expense of these operations. The airport committee, through Chairman Milo F. Kent, has also arranged to have its own investigator visit all the air mail fields in the West and report on conditions at each, to aid the committee in determining what improvements should be made once it has bought the land for the port.

Discussion among the supervisors seems to lean toward some sort of a lease-purchase arrangement for acquiring this land, with payments of $100,000 or so being made annually until the purchase price has been paid. Meanwhile, the city would hold the land under lease. This is favored in preference to a bond issue because the city has a number of other projects afoot which will require issuance of bonds and it is desired to conserve the bonding power. However, the assessment-district plan adopted by Santa Monica has some proponents in San Francisco.

This wish to reserve the bonding power has been one of two major causes preventing other cities from issuing bonds for the construction of airports. The other deterrent is the reluctance of city governments to ask authority to issue securities in such large amounts as have been necessary for establishing these aerial harbors. Use of tax money presents legal complications, besides concentrating in a few years a burden which should be distributed.

An airport presents this peculiarity, as distinguished from all other public improvements, the great bulk of its cost is initial. If a city has a harbor which it is desired to develop, the work can be spread over a number of years. Roads, streets, sewers, even parts of a water supply system, can be built a little at a time, as needed or as funds become available. But an airport must be considered almost as a whole. The land which must be purchased in order to give one airplane landing space is adequate for a score,—a hundred airplanes. The only additions necessary to enable any reasonably large airport to handle more planes are more hangars, increased office space and such improvements, representing relatively but a small portion of the cost of the utility as a whole.

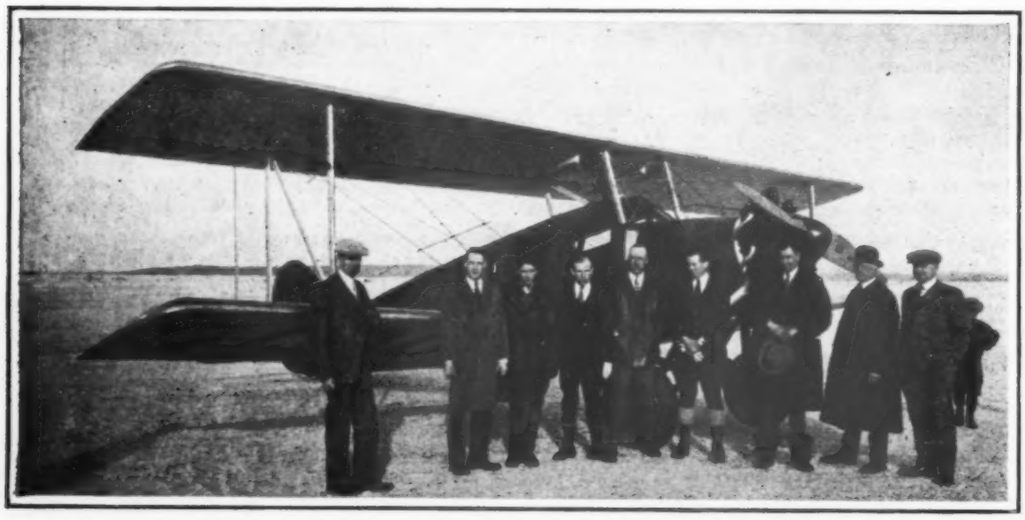
Admittedly, aviation is not now at such a point that it can carry the interest on these heavy expenditures alone. A harbor is different; its development can be kept just a little in advance of the demands of commerce. A street system is different; its extension can be pressed a little at a time, as residences are built further and further from the city's center. Either pays its own way, or very nearly does so, the one through the increasing volume of dockage fees and the other through the increased value of property and hence larger volume of tax money.

But an airport represents a large expenditure which must be sprung on the public stone cold, with no opportunity of making it pay its way for some years to come. At the same time, the farsighted city government is confronted with the fact that if it does not provide facilities for aviation now, competition will draw air travel and air commerce elsewhere.

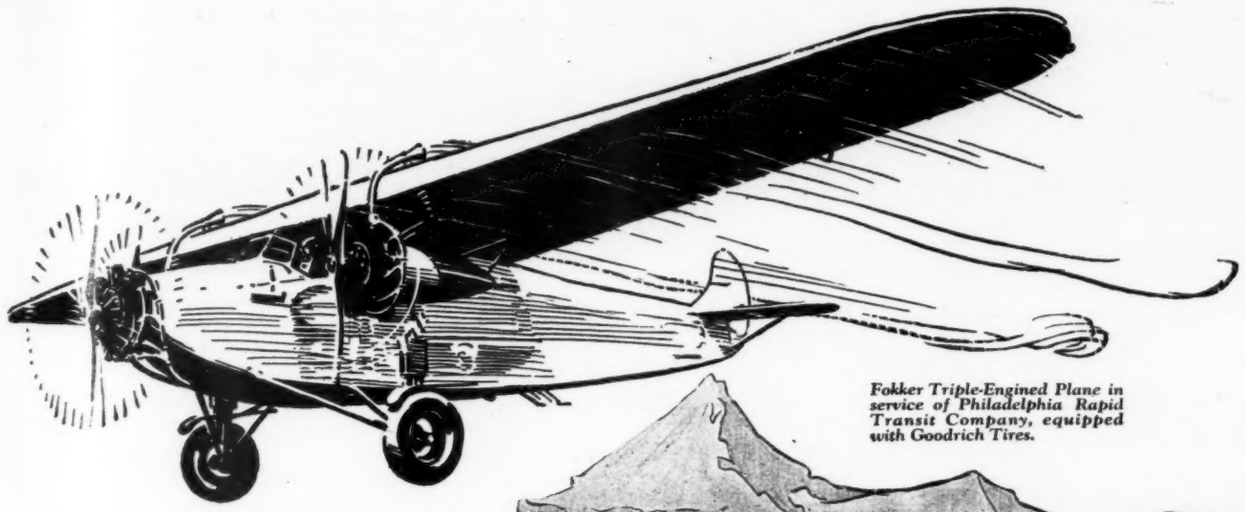
The result has been a series of legal fictions—at least they are regarded as such in some quarters—that the airport is a park or a part of the city's harbor, or something else. The remedy seems to lie in legislative action empowering communities to construct airports as they now are empowered to construct roads, bridges, docks, and other public works.

Morally, there is no difference between one public work and another,—between a harbor, which is a utility and an airport, which is a smaller utility designed to accommodate another kind of vessel. The airport is merely a newcomer for which no legal provision has been made. There is no shadow of moral doubt that it is just as right for a city to bond itself to establish an airport as it is for the same city to bond itself to build a dock.

However, there is a legal doubt and when one such exists leave it to the attorneys for the bond houses to find it! Bonds involving a legal doubt simply are not saleable. Therefore, until this legal doubt is resolved, cities wishing to establish airports may have troubles, though there is evidence on all sides that governmental bodies are willing to do all the law allows them to do and sometimes to bend the legal limits a trifle.



The Stinson-Detroiter plane, recently purchased by the Patricia Airways and Exploration Co., Ltd., of Toronto, for use between Haileybury and Rouyn, Canada.



Fokker Triple-Engined Plane in service of Philadelphia Rapid Transit Company, equipped with Goodrich Tires.

Building *Aerial* Supremacy!

Goodrich has ever kept pace with every development in motor transportation.

The same policy holds in the field of aviation—for Goodrich makes tires for every requirement in airplane transportation.

Two new developments in Aircraft Tires by Goodrich are the new 18x3" and 20x4" for straight side rims. These round out the line, which now contains a complete range of sizes from 18x3" to 64x14".

For smooth take-offs and safe landings use Goodrich Airplane Tires!

THE B. F. GOODRICH RUBBER COMPANY
Established 1870 Akron, Ohio

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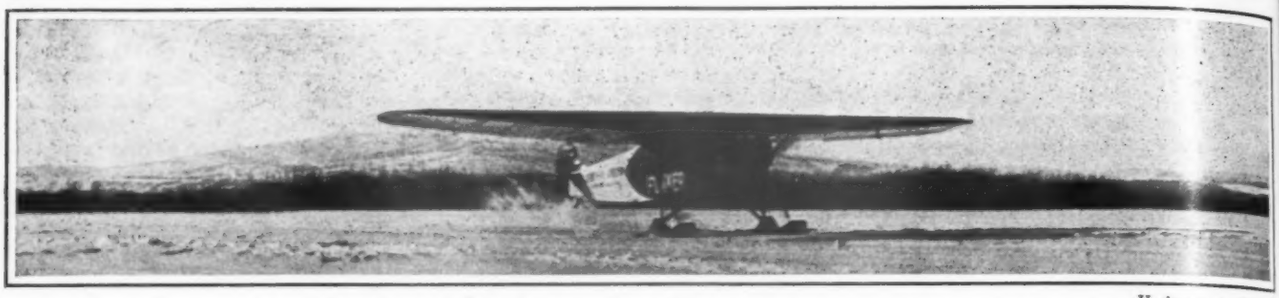
Aeronautical Accessories

Goodrich Ring-Type Shock Absorbers

For maximum safety. Multiple strands of tough rubber compressed into a double woven casing. If one ring breaks the landing gear is protected by the other rings and only the broken ones need to be replaced.



Underwood Photo.

Captain Wilkins' Fokker (Wright Whirlwind) plane "Alaskan" taking off at Fairbanks, Alaska.

Captain Wilkins Safe

Capt. George H. Wilkins, commanding the Detroit News-Wilkins Arctic Expedition, from whom no word had been received since March 30, when he sent a message that he was down on the ice, 125 mi. from Point Barrow, was reported safe at Beachley Point, Alaska, April 20.

Captain Wilkins and Carl B. Eielson started on March 29 for an exploration flight over the unexplored Artic region north of Alaska. The plane carried fuel sufficient for a fourteen hour flight and Captain Wilkins planned to fly 600 mi. from the Point Barrow base. Alger Graham and an Eskimo guide made several flights in a relief plane from Point Barrow in search of the missing fliers, but found no trace of them or of the plane. Graham returned to Fairbanks for supplies, but expected to resume the hunt. Captain Wilkins carried a food supply sufficient for two weeks.

Beachey Point, where Captain Wilkins and Eielson now are, is at the mouth of the Colville River, 125 mi. east of Point Barrow, Alaska. During the three weeks they have been missing, the fliers were making their way over the ice to this land, which is the only point of shelter in this great stretch of ice and snow. Details are lacking as to the landing and condition of the plane.

Samuel Untermyer Flies To Jerusalem

Samuel Untermyer, president of the Palestine Foundation, arrived in Jerusalem Apr. 2, in an Imperial Airways airliner, from Cairo. The trip was rough and the plane had to detour thirty miles over the Mediterranean to avoid a sand storm.

De Luxe Planes on London-Paris Line

The Imperial Airways, of London, Eng., expects shortly to put into service between London and Paris airplanes with buffets, bars and other luxuries. Planes will leave each city at noon daily and the line will be known as the Silver Wing Service. Each plane will carry a steward.

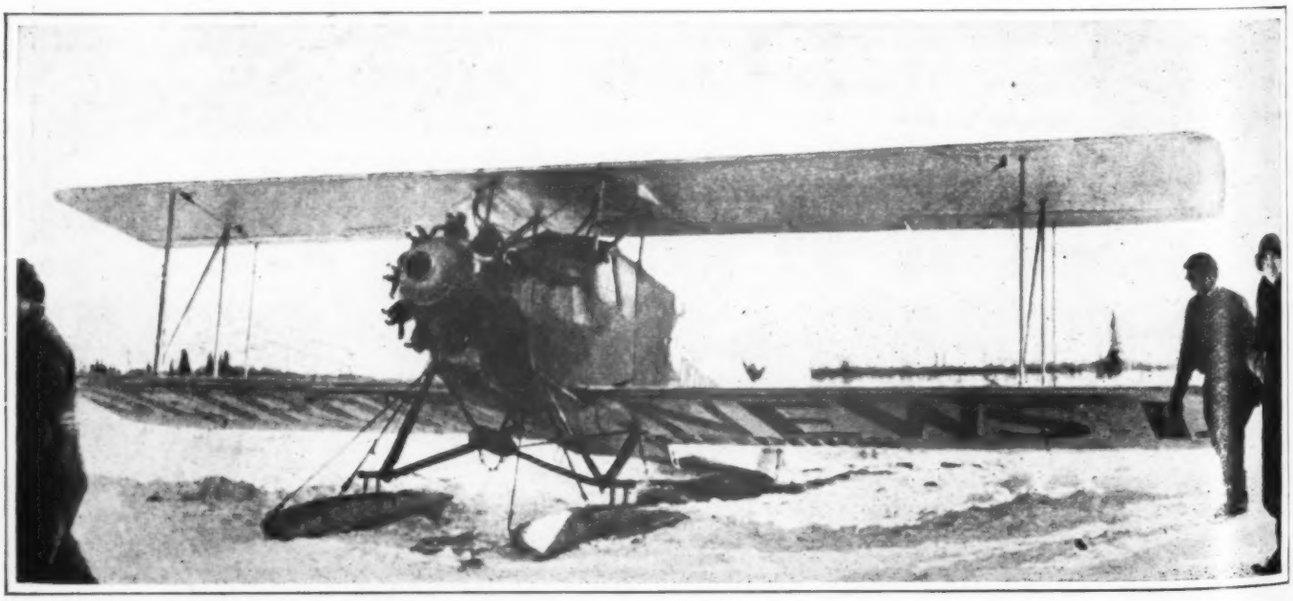
Three-engine Armstrong Siddeley Argosy planes, each with a twenty passenger capacity, will be used in the new service. The Imperial Airways, it is said, in the future will name all planes for cities.

First Air Route Map

It is understood that the first airways map of the Department of Commerce is soon to be published. The route covered in this first map is from Kansas City, Mo., to Moline, Ill., by way of St. Joseph, Mo., a distance of more than 300 mi.

All preliminary drafting on the map has been completed by the Coast and Geodetic Survey of the Commerce Department. A. L. Giacomini, one of the chart experts of the Coast and Geodetic Survey, is now in Kansas City to make a flight over the route and check up on the accuracy of the new map under flight conditions. He made a flight, accompanied by Lieut. Isaiah Davies, U. S. Army, starting from Richards Field, Kansas City. As soon as the map has been carefully checked, through an actual flight, it will be corrected, if necessary, and published by the Coast and Geodetic Survey.

All airway maps, either Air Corps or hydrographic office are now available at the Department of Commerce.



The Stinson Detroiter cabin plane (Whirlwind engine) of the Detroit News Arctic Expedition under the leadership of Captain Wilkins. The skiis are of duralumin construction.

ARE YOU REPRESENTED IN THESE COUNTRIES?

If not, you are neglecting one of the most fertile markets for the aircraft industry in the world.

There is an exceptional demand, *now*, in these countries for modern American aircraft of all types, also motors, parts and supplies.

THE Payne Export and Import Company, Incorporated, is an organization composed of pioneers in the aircraft industry. Its members are men with a thorough knowledge of aircraft construction and operation, and have had the experience of successfully conducting business with these countries for many years.

Our policy of representing only one manufacturer of any product (we do not represent competing companies) assures our clients of complete and thorough representation.

Visit our booth at the air show at Bolling Field, or let us tell you by mail of the thorough manner in which we tell the *visual* story of our clients products.

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Aircraft's Sign of Quality

The Payne Export and Import Co., Inc.

150 Broadway, New York City **Cable address: Hughcope, N.Y.**

REPRESENTING: Wright Aero. Co., Pennzoil Co., Inc., Pioneer Inst. Co., Sikorsky Mfg. Co., J. W. Wood Elastic Web Co., Titanine, Inc., Rome-Turney Radiators, Vimalert Liberty Motors, New Jersey Veneer Co., Aero Supply Co., Inc.

A High Pressure Injector Starter

One of the latest improvements in aircraft equipment is the high pressure injector starter for aircraft engines, developed by the Detroit Air Appliance Corp. Engines of great power and high compression, such as are used in airplanes, are slow to start, particularly in cold weather, due to the difficulty in getting sufficient speed of rotation to cause the carbureter to function properly. The high Pressure Injector starter has been designed to overcome this difficulty.

The starter comprises a small crank, or cam-driven air compressor, a seamless steel tubular tank, of about 6/10 cu. ft. capacity, an automatic valve that releases the load at 375 lb. pressure, a release valve for starting, inlet valve for the cylinders, distributor and copper tubing. The complete starter weighs between 25 and 35 lb. Every part of the starter reflects precision in design and workmanship and the assembled starter is compact and easy to operate.

The pilot, by merely pressing a button, releases compressed air from the tank to the distributor which is timed and rotates with the engine. The greater portion of the air is conducted to that cylinder which is on its power stroke. Entering the cylinder, the air forces the piston downward and engine rotation begins. Simultaneously, the smaller portion of air and a properly proportioned amount of gasoline goes through a carbureting process and is forced into the cylinder that is on it's compression stroke. Ignition takes place when this stroke is complete or slightly past top dead center, with the effect of speeding the rotation already begun by the air. A few revolutions forced in this way bring the carbureter into action and the start is complete. The starter is entirely automatic and is operated from the pilot's cockpit, enabling the pilot to start his engine without any assistance.

Commander De Pinedo in Washington

Comdr. Francesco de Pinedo arrived in Washington on April 19, from the Pacific Coast for a short stay before leaving for New York to receive the new seaplane in which he will continue the Four-Continent Flight. The new plane, the Santa Maria II, which will replace the one destroyed by fire in Arizona, was loaded in Italy aboard the steamship Duilio on April 19, the steamer sailing for New York the same day.

The Italian Ambassador, Giacomo de Martino and members of the embassy staff met Commander de Pinedo at the station and on the evening of his arrival gave a reception and dinner at the embassy in his honor. He was presented to President Coolidge the next day.

During his stay in Washington, Commander de Pinedo visited the Army and Navy air fields and was the guest at a series of luncheons and receptions.

Huron Valley Air Meet

A definite announcement has just been made of the Air Meet to be held at Ypsilanti, Mich., June 10, 11 and 12. The meet will be held at the new airport located three miles southwest of Ypsilanti on State Road M-23.

The contests will include two entirely new types of cross country races, a speed race, a dead stick precision landing contest and a pony express race.

The rules of the cross country races eliminate formulas and handicaps, which have always been a source of controversy. One takes into consideration speed only, and the other distance.

The speed race will be of the conventional type with the exception that it will be run in two preliminary and one final heats, and all planes will start from an at rest position with engines running, in groups not to exceed five planes each.

The Pony Express Race was originated for use at the Battle Creek Air Race Meet held in 1925 and because of its novel features was used at the Ford Airport during the first Ford Reliability Tour and at Flint in 1926.

All planes will start from an at rest position with engines running, in groups of not more than four planes. The pilots are required to land at the completion of each lap, shut off their engines, personally exchange a parcel with the judge, and resume flight. The race is five laps on a three mile course. The winners will be determined by elapsed time.

The dead stick contest will be governed by the point at which the plane comes to a complete stop.

By means of an unusual division of the purses, every contestant is assured of at least sufficient prize money to pay his expenses. The prizes vary from $300 for first money to consolation prizes of $25.00 a race per man.

The officials of the meet are Luton S. Knowles, N.A.A. contest committee representative, H. A. Scott, referee, C. C. Bryant, chief judge, Glenn Todd, starter. Ralph Andrews, who has earned distinction as an announcer at several previous aviation functions, will handle the "mike" at Ypsi.

The contests are to be conducted under N.A.A. sanction and will be open to any pilot holding an F.A.I. certificate and N.A.A. sporting license who has a Federal license, any grade, or who has applied for a Federal license and has not as yet been examined. Examinations for F.A.I. certificates and sporting licenses will be given at the Ypsilanti Airport June 8, 9, and 10 for those who have not already qualified. Entries close June 1, 1927.

The program is so arranged that all participants will be allowed to carry passengers from 4:00 p.m. until dark each day. Ride tickets are sold by the management, gasoline and oil furnished gratis, and the gross receipts from rides divided equally between the pilots who carry the passengers and the Huron Valley Flying Club. Under this arrangement, twelve hundred passengers were carried at the Flint Air Meet in 1926.

Some of the group who met the Italian flier Comdr. Francesco de Pinedo on his arrival in Washington. Left to right, they are: Brig.-Gen. Fechet, Asst. Chief of the Air Corps; Commander Scaroni, Air Attache to the Royal Italian Embassy in Washington; Commander de Pinedo; Colonel Villa, military Attache to the Royal Italian Embassy in Washington; and Italian Ambassador de Martino. Commander de Pinedo arrived in New York on April 25. (Acme Photo)

The Aeronautic Branch of the Department of Commerce uses the Stinson-Detroiter, equipped with starter, brakes, heated sound- and fire-proof cabin for four persons.

Stinson - Detroiters

America's Finest Aircraft

Lead In Design, Performance and Sales

Ask these owners about the Detroiter:

Northwest Airways Inc.
Florida Airways Corporation
Patricia Airways & Exploration Co. Ltd. (of Canada)
Marmon Motor Car Company
Department of Commerce
Wayco Aerial Taxi Company
Horace E. Dodge
Edward F. Schlee
John Duval Dodge
Capt. George Hubert Wilkins
Detroit News
R. C. Durant
The Wise Birds Assn.
Frank W. Blair
Newton S. Skillman
Charles B. Bohn
William B. Stout
Karl H. Keller

BEYOND compare in comfort, safety and speed, Stinson planes have set the standard for modern aircraft. They were first to combine brakes on the wheels, starter on the motor, sound and fireproof heated cabins, luxurious upholstery and inherent stability so marked that they fly themselves in the air.

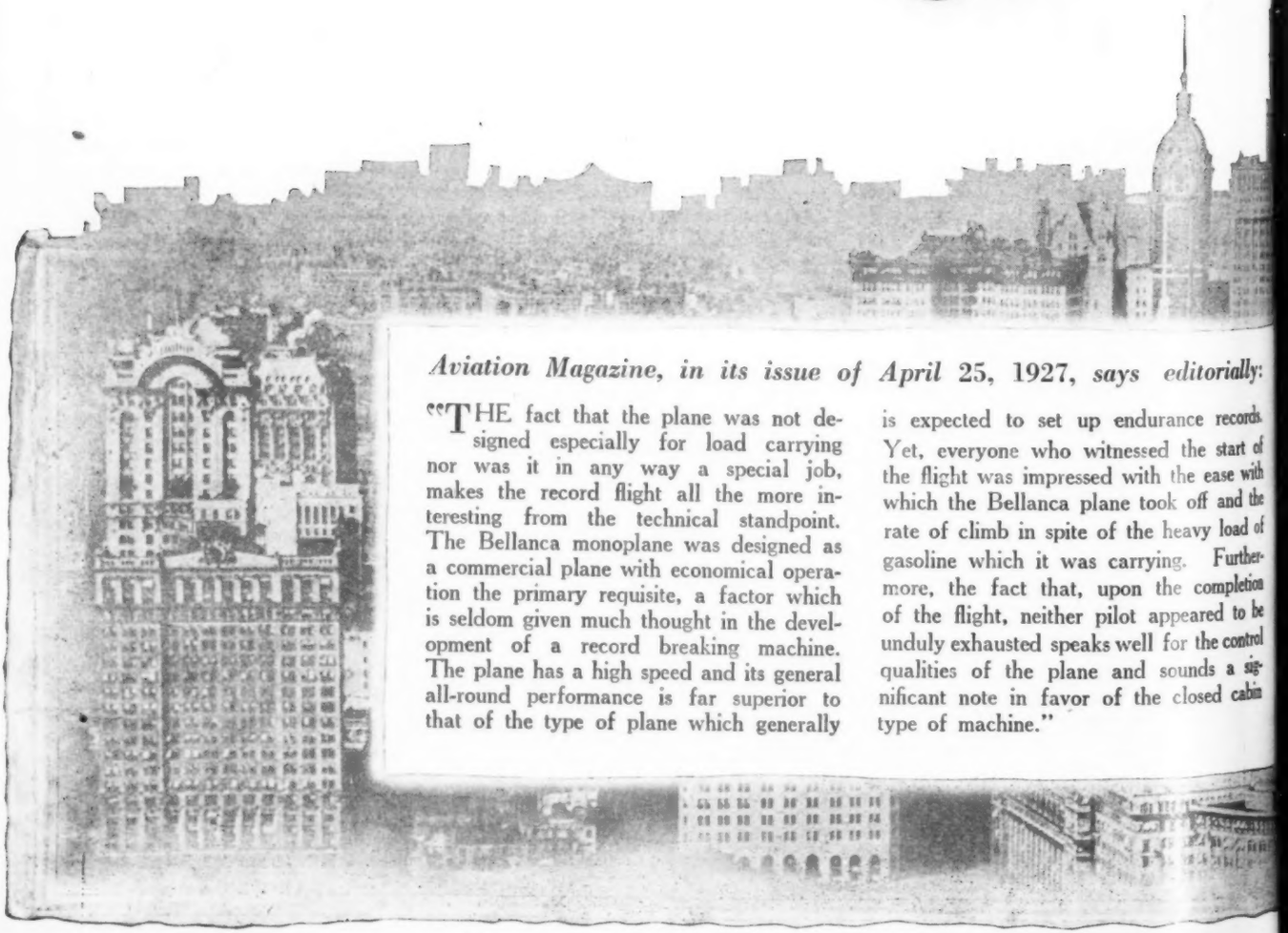
Other manufacturers have been quick to adopt these features developed as a result of the practical experience of Edward A. Stinson, who has flown more miles, trained more pilots and tested more planes than any other man. Stinson-Detroiter sales lead their field, because everywhere the Detroiter is accepted as the supreme embodiment of comfort, economy and efficiency.

Let us tell you how the Detroiter can solve your problem, be it air mail, aerial taxi service, business, pleasure, photographic or training.

Stinson Aircraft Corporation, - - Detroit, Michigan

Factory, Northville, Michigan

BELLANCA



Aviation Magazine, in its issue of April 25, 1927, says editorially:

"THE fact that the plane was not designed especially for load carrying nor was it in any way a special job, makes the record flight all the more interesting from the technical standpoint. The Bellanca monoplane was designed as a commercial plane with economical operation the primary requisite, a factor which is seldom given much thought in the development of a record breaking machine. The plane has a high speed and its general all-round performance is far superior to that of the type of plane which generally is expected to set up endurance records. Yet, everyone who witnessed the start of the flight was impressed with the ease with which the Bellanca plane took off and the rate of climb in spite of the heavy load of gasoline which it was carrying. Furthermore, the fact that, upon the completion of the flight, neither pilot appeared to be unduly exhausted speaks well for the control qualities of the plane and sounds a significant note in favor of the closed cabin type of machine."

Supremacy

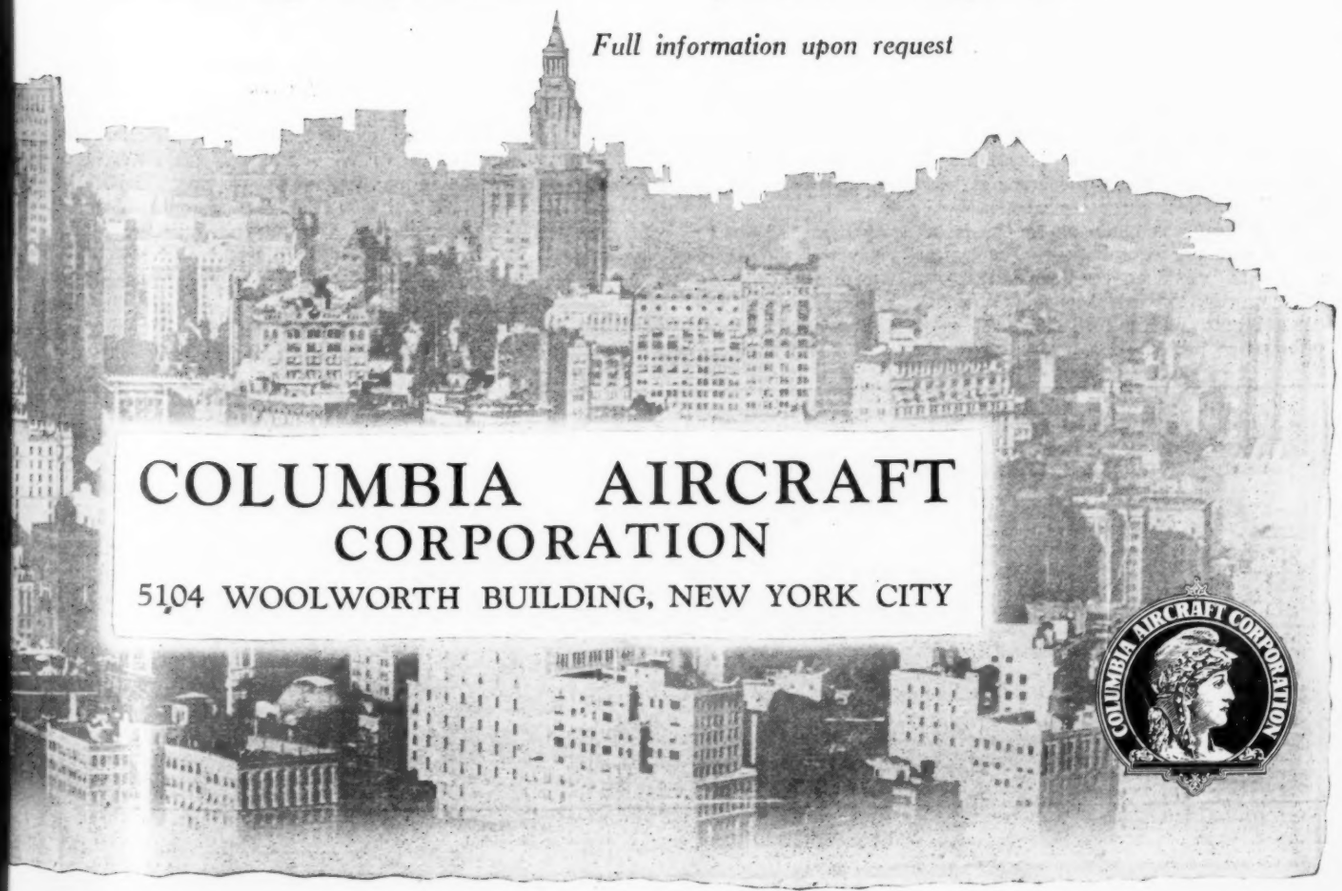
and the

World's Endurance Record

WHEN pilots Clarence D. Chamberlin and Bertrand B. Acosta landed the Wright-engined Bellanca Commercial Cabin Monoplane on Roosevelt Field, Long Island, on April 14, after remaining continuously in the air for 51 hours, 11 minutes and 20 seconds, they brought back to America one of the world's premier air records by a margin of nearly six hours; a record which, more than any other, stands for advanced design and performance.

For the airplane operator or air transport executive the emphatic message of the endurance record is that the Bellanca design has given to the world a more efficient and economical commercial plane—a plane combining with ample safety factors, an extraordinary load carrying ability, excellent maneuverability and controllability, quick takeoff, high air speed and slow landing speed—all essential factors in the conduct of profitable air transportation.

Full information upon request



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Aerial Photography Aids Highway Improvement Plans

Experience in Planning for Buffalo's Growing Traffic Needs Shows Value of Aerial Surveys

UNDER the caption, "How Aerial Maps Aid in Planning Highway Improvements," in the March issue of "The Highway Magazine," George C. Diel, county engineer, Erie County, N. Y., discusses the value of aerial photography and surveying to the laying out of main highways. Mr. Diehl discusses the details of the aerial survey and map which is being made of Erie County primarily for the purpose of a general study of the Greater Motorways System and the preliminary ground location of the various roads comprising the system. The survey was authorized by the Board of Supervisors and is being made under the direction of the County Engineer.

Mr. Diehl says in part:

"For the purpose of an aerial survey ground controls are necessary, together with a skillful pilot and photographer. To bring photographs to scale they must be taken from a fixed height. Both the plane and the camera must be especially adapted to this use. The photographs are taken vertically from a high altitude, with an overlap which is eliminated when they have been accurately scaled, and built up into a mosaic picture of the terrain included. Previously surveyed lines or traverses across the region may be used for control.

"The flying and photography was done at an elevation of 9,600 ft. and the finished map is 600 ft. to the inch. With few exceptions the control points are two miles, or less, distant from each other. Traverses of existing roads were used for the control. Most of these roads had been surveyed for existing highway improvements and the notes of these surveys were used in platting the control. Nevertheless, it was necessary to run many miles of new traverse.

"Too much time or money, however, should not be spent on undue refinement for accuracy. This is controlled, though, by the accuracy required of the completed map. The platting of a control map in the ordinary drafting room, to cover 170 square miles of territory on a scale of 8.8 in. to the mile, is quite a labor. The sheets are large and difficult to handle and to retrace the work for the purpose of closing an error in traverse may be time wasted. In attempting to close traverses several miles in length it is readily seen that a failure to close, when the error is less than one per cent, is for all practical purposes accurate enough.

"The map was made on the basis of a variation of not to exceed one per cent between the control map and the aerial map with points on the former not over two miles apart. In other words, the aerial map was required to agree with the control map within .088 in., scaling each way from central points two miles apart.

"For the purpose of general study and planning it is at once apparent how trivial one or even two per cent in variation of map distance becomes when the errors are not cumulative and when such error does not exceed 1/10 or even 1/5 in. in open country. Where the control points can be closer together, as in street areas, this error can be reduced to 1/100 of an inch on a 600-foot block, closer than a draftsman can plot it. . . .

"Aid in laying out preliminary lines is only one function of an aerial map. In country similar to that around Buffalo the ability to show a property owner where the line is located, and why it is so located, is of more value than the mere location of the line. For these reasons the securing of rights of way becomes one of the most important uses of aerial maps.

"Another important use is in legal disputes involving property lines and accidents on public property. In the past Summer a serious accident happened near a town park and suit for damages was brought against the town board. Testimony was given, by both sides, that the accident happened at or adjacent to a certain depression. The county engineer had furnished the town with an enlarged aerial map of the locality in question. This map was entered as evidence, the depression located thereon and shown to be off the property owned by the town. The plaintiff lost. . . .

"Aerial maps have cost Erie County about $100 a square mile, not including the mosaic. The limit of the return on this investment is determined only by the activities of the locality mapped and the people using it."

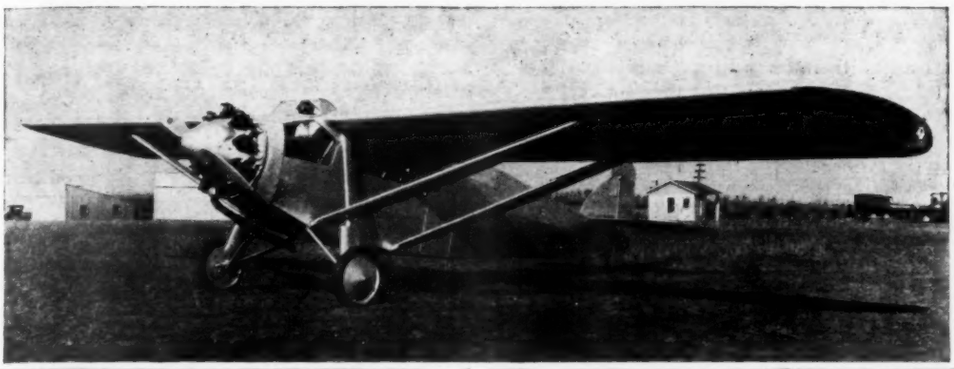
Cameron Made Air King Agents

Louis Cameron, of the Cameron Aviation Company, of Toledo, Ohio, has just returned from Lomax, Ill. flying cross-country in a new Air-King which he has purchased.

The Cameron Aviation Company has closed a dealers contract for the entire state of Ohio and will act as exclusive sales agency for Air-King airplanes. LeRoy Davis, chief pilot of the Cameron Aviation Company accompanied Mr. Cameron and is enthusiastic over the performance of the Air-King.

In addition to placing orders for regularly equipped planes, the Cameron Aviation Company has ordered one Air-King with a special Hisso engine. This particular machine has been sold by the Cameron Aviation Company.

The arrival of the Pan-American Fliers at Trinidad.



Thorobreds, Every One!

They're Travel Airs

THE BI-PLANES, a Whirlwind and an OX-5, are "doing their stuff" at the All-America Aircraft Display at Washington this week, with Geo. A. Wies in charge. (George is New York representative of Travel Air).

The monoplane, already a stalwart youngster of the Travel Air family, could not be present—

IMPATIENT BUYERS HAVE DEPRIVED US OF EVEN OUR EXHIBITION SHIPS.

Travel Air literature sent to anyone on request.

TRAVEL AIR MFG. CO., Inc.

Factory and General Office
WICHITA, KANSAS

Life Insurance for Those Who Fly

Readers of AVIATION will learn with interest that it is now possible for fliers to secure life insurance coverage up to high limits of indemnity. Until now, while certain insurance companies have announced themselves in a position to cover the lives of pilots, etc., inquiry has revealed the fact that such coverage has only been obtainable within certain low maximum limits. Moreover, such policies have been applicable only to certain classes of fliers.

Now, however, through the endeavors of Barber & Baldwin, Inc., of New York City, representing the United States Life Insurance Co., it is possible for any pilot or passenger, on commercial airlines or in aerial service operations, to obtain a life policy up to a maximum indemnity of $50,000. This maximum is about five times higher than the highest limit of indemnity heretofore available and the instigation of this form of aviation insurance can only be regarded as one of the most important items in the aeronautical news at this time.

The firm of Barber & Baldwin, Inc., it will be recalled, are pioneers in aviation insurance. It is fitting, therefore, that it should be as a result very largely of the personal endeavors of H. Barber himself that this new line of aviation insurance has been made possible. It was Mr. Barber, in fact, who wrote the very first aviation insurance policy, a Lloyds policy, back in 1912, and it is his long experience, together with that of other members of the firm of Barber & Baldwin, that this latest line of aviation insurance is made possible.

Under the terms of this new U. S. Life Insurance Co. policy, any flier can insure his life against *all* risks including those of flying and can, when he gives up flying, revert the coverage to eliminate the aviation risk, in which case the premiums on the policy would be reduced somewhat. In other words, on this new life policy, the extra premium due to the aviation coverage may be dropped in the event that the insured gives up flying and his policy merely becomes an ordinary life policy. This facility is extremely important since it eliminates the necessity of fliers taking out special aviation policies which become valueless when the flier retires from active flying.

Robertson Purchases Kentucky Stock

The stock of airplane accessories, recently offered for sale by the Kentucky Aircraft Company, of Owensboro, Ky., was purchased by the Robertson Aircraft Corporation, and shipped to St. Louis.

Insurance for French Fliers

An insurance bill has been approved by the French Ministry of Finance which will provide insurance for all aviation workers in the Government services. The insurance nominally will be paid for by the insured, but the bill covers an increase in Government bonuses to cover this.

Bibliography of Aeronautics, 1924

This work, published by the National Advisory Committee for Aeronautics, covers the literature published from Jan. 1, to Dec. 31, 1924, and contains the work of the Smithsonian Institution issued as volume 55 of the Smithsonian Miscellaneous Collections, which covered the material published prior to June 30, 1909, and the work of the National Advisory Committee for Aeronautics as published in the Bibliography of Aeronautics for the years 1909 to 1916, 1917 to 1919, 1920, to 1921, 1922 and 1923.

As in the Smithsonian volume and in the Bibliography of Aeronautics for the years 1909 to 1916, 1917 to 1919, 1920 to 1921, 1922 and 1923, citations of the publications of all nations have been included in the languages in which these publications originally appeared. The arrangement is in dictionary form with author and subject entry, and one alphabetical arrangement. Detail in the matter of subject reference has been omitted on account of the cost of presentation, but an attempt has been made to give sufficient cross reference for research in special lines.

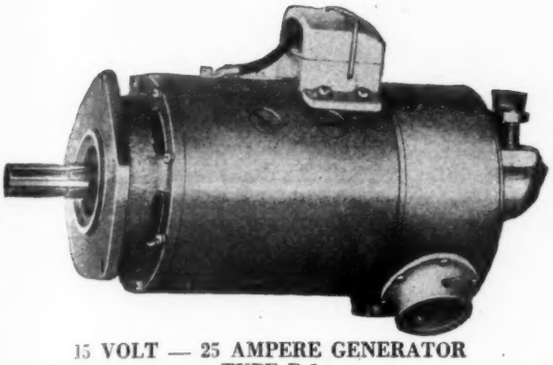
The Bibliography of Aeronautics, 1924, contains 114 pages and may be obtained direct from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 25 cents per copy.

Obsolete Engines For Colleges

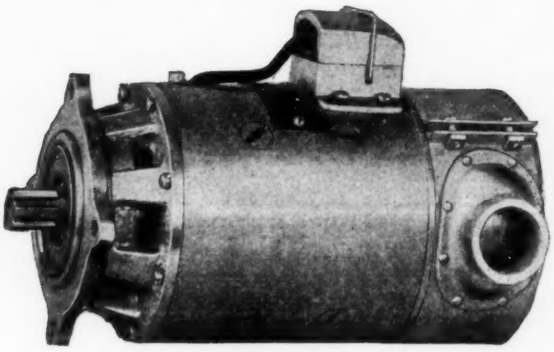
The first issues of obsolete aircraft engines to educational institutions for instruction purposes have been made to the University of Nebraska, Lincoln, Nebr., and to the Worcester Polytechnic Institute, Worcester, Mass. This was done under the Act of Feb. 14 which provided that the Secretary of the Navy in his discretion could dispose of, without charge except for transportation and delivery, to properly accredited schools, colleges and universities for use in aeronautical courses, any aircraft, aircraft parts, instruments, or engines which had been declared obsolete by the Navy Department. It further provided that such aircraft, aircraft parts and engines were not to be used in actual flight.

King Albert of Belgium presented the Harmon Trophy for Belgium for 1926 to Capt. Georges Medaets, recently. In group are, left to right, Captain Medaets (touching the table), King Albert, Clifford B. Harmon, pres. of the International League of Aviators and donor of the Trophy, Capt. Pelletier d'Oisy, winner of the French Harmon Trophy for 1926.

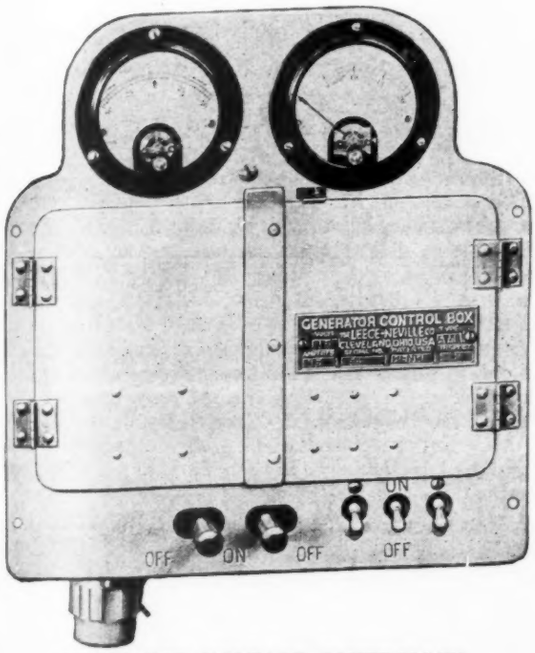
LEECE-NEVILLE GENERATORS



15 VOLT — 25 AMPERE GENERATOR
TYPE B-1



15 VOLT — 50 AMPERE GENERATOR
TYPE E-3



GENERATOR VOLTAGE CONTROLLER
TYPE AMD-1

GENERATOR VOLTAGE CONTROLLER
TYPE E-3

Leece-Neville Voltage Regulated Generators for aeroplanes are designed to operate at 15 volts in capacities of 15 amperes, 25 amperes and 50 amperes.

Leece-Neville Voltage Regulated Generators insure electric current at a steady voltage up to the generators capacity, as well as protection for all instruments, lights and wiring against a sudden rise in voltage due to open circuit.

Leece-Neville Voltage Regulated Generators are in use by United States Army Air Service, United States Navy Air Service, United States Air Mail Service and a number of private operators of aeroplanes in commercial service.

Leece-Neville Voltage Regulated Generators can also be operated with or without a storage battery.

LEECE-NEVILLE COMPANY Cleveland, Ohio

Lieutenant Callaway Sets New Speed Record

Lieut. S. W. Callaway, flying at Hampton Roads on April 23, established a new World speed record for seaplanes, carrying a load of 1,102 lb. He attained an average speed of 147.263 m.p.h. for 62.1 mi. (100 km.)

The records are being forwarded to the F.A.I. for confirmation and comparison with the record made at St. Raphael, France, May 13, 1926, by Lieutenant Demongeot, when he flew at a speed of 126.309 m.p.h.

Lieutenant Callaway took off from the Naval Air Station, at Hampton Roads, at 2:30 p.m., in a new Vought Corsair (Pratt & Whitney Wasp engine) and flew the triangluar course of 62.1 mi. in 25 min., 17 sec. The plane used was the one in which Lieut. George R. Henderson broke the World's altitude record for seaplanes with 500 kg. load on April 14.

Lieutenant Callaway was born at Bismarck, N. D., March 10, 1895, and became a pilot in the U. S. Navy in 1917. He is now stationed at the Anacostia Naval Air Station and is a member of the Navy test staff there.

New German Lightplanes

The German engineer Espenlaub, of Cassel, Germany, has recently constructed a small lightplane with a motorcycle engine. On trial, the engine is said to have flown 328 mi. from Cassel to Berlin in 3½ hr., consuming only $1.30 worth of gasoline. (Whether this indicates about 6 gal. of gasoline, assuming the rate in the United States, or a little under 3 gal., assuming the approximate cost of gasoline abroad, is not clear—Ed.)

A further report says that a two-seater Messerschmidt lightplane, also with a motorcycle engine, recently flew 721 mi. in 7 hr., 50 min. and reached an altitude of 14,850 ft. The company which manufactured this machine is now specializing in a 35 hp. plane with an Anzani engine, which should sell for about $1,000. The machine will have a span of about 34 ft. and a length overall of 17 ft.

Dutch Trans-Atlantic Flight

A trans-Atlantic flight, under the auspices of the Royal Dutch Air Force, is being contemplated. If undertaken, the route would be from Holland to Canada by way of Iceland, Greenland and Vancouver.

Chanute Aero Club

The Chanute Aero Club, of Chanute, Kan., was recently organized to advance aviation activities in that city. At present there are seven members and several names are on the application list. The club members own two planes, a Swallow and a Canuck and two more planes are on the field, the owners of which may join the club. A hangar is being erected on the field, which is a quarter section, one mile west and a half a mile south of Chanute. A gasoline pump and a field marker are to be installed soon and one or two field managers will be on duty at the field at all times.

A young cyclone played havoc with the planes on the field Sunday night, April 10. The hangar framework was wrecked, falling on the Swallow, and damaging one wing. A Jennie was tossed over the fence and landed in a telephone wire, almost demolishing the Jennie and a Standard was taxied into the road, doing slight damage.

Student training, passenger hauling and advertising are the chief occupations of the local pilots.

Holland Stamps on Air Mail

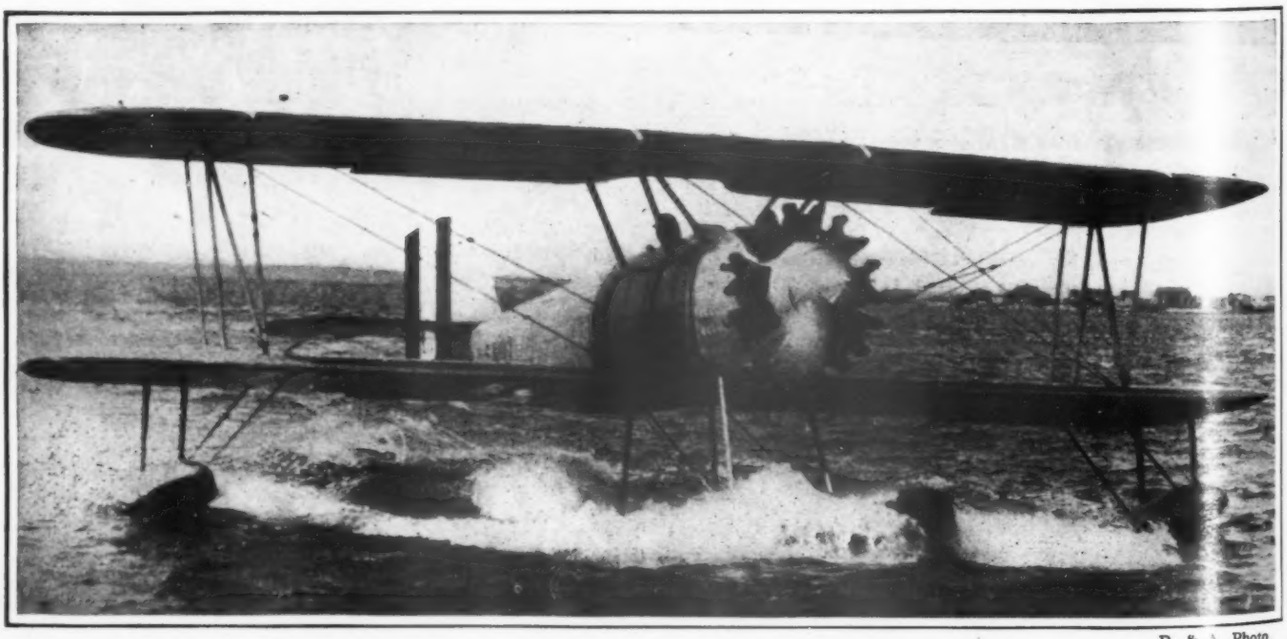
Pursuant to the request of the Postal Administration of the Netherlands, commencing at once, only Netherlands postage stamps will be recognized in prepayment of the fees required for onward transmission by the United States Air Mail Service of letters mailed in the Netherlands.

Sites Offered for New York Airport

As a result of a campaign started several weeks ago by the Committee on Air Landing Places, of the New York Board of Trade and Transportation, ten offers have been submitted for sites for an airport. The landing places offered are:

The property between Baychester Avenue and the Hutchinson River, north and south of East 222d Street; a site in the Hunt's Point section of the Bronx, between East River, Long Island sound and the Bronx River; the Empire City Race Track at Yonkers, two sites of an acreage of 250 and 99 acres each, lying east of Garden City, L. I.

Lorillard Spencer, chairman of the committee, has announced that a thorough investigation of all the sites and suggestions will be made before a decision is made.



P. & A. Photo

Lieutenant Callaway coming in on the Vought Corsair (Pratt & Whitney Wasp engine) after breaking the World speed record for seaplanes carrying 500 kg. over a 100 km. course. His speed was 147.263 m.p.h.

TWO "Hoffmann" Precision Roller Bearings on the shaft of the Wright "Whirlwind" Engine, carried the load of the Bellanca Plane in its record-breaking non-stop flight of 51 hours and 12 minutes.

must be provided, two rry the crankshaft of engine used on the lanes.

l be most costly itself may de- ility to carry the where the ultimate in de- service is the one criterion—in such cases, "HOFFMANN" Load-ability, Shock-ability and Speed-ability are the safety factors employed by engineers and manufacturers in increasing numbers.

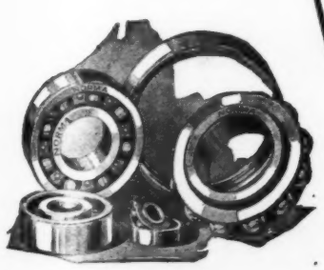
The design and construction which give the "HOFFMANN" its preeminence are fully described in Catalog 904. And the standard types, sizes and ratings are given in Catalog 915.

Both will be sent at your request.

NORMA-HOFFMANN BEARINGS CORPORATION
STAMFORD, CONN. - - U.S.A.

NB-841

"HOFFMANN"
PRECISION
ROLLER BEARINGS



And, where dependability is just as essential, but the loads more moderate and steady, engineers specif

"NORMA"
PRECISION
BALL BEARINGS

In both open and closed types, in the range of sizes leading up logically to the heavier duty for which "HOFFMANNS" are so well adapted.
Catalog 905

National Air Tour to Start June 27

The 1927 airplane reliability tour, this year to be known as the National Air Tour is scheduled to leave Ford Airport, Detroit, Mich., June 27. This will be the third Tour for the Ford Trophy.

Although final determination as the line of flight and cities to be visited has not been made at the time of going to press, it is planned by the Tour committee to make the flight of about two weeks duration covering some twenty cities. At each of the twenty stopping places, public demonstrations are planned with a view towards furthering public interest in air transportation and to enlist the support of commercial and civic interests in the establishment of adequate airports.

In addition to the attractive prizes and trophies for participants, an inviting program of entertainment and reception has been planned for each stop-over. Transportation facilities from landing fields to hotels, hotel accomodations, all fuel, etc., will be supplied by the Tour management and cooperating committees throughout the Tour.

The Tour is arranged to permit manufacturers and pilots to compete for the Edsel Ford Trophy, Stout Trophy and some $12,000 in cash prizes. Additional prizes of $200 to each entrant completing the Tour will also be awarded. The Edsel Ford Trophy, donated to promote interest in commercial aviation and which is held by the winner for a period of one year until won three consecutive times, will be awarded on points. Another trophy to be awarded for the fastest elapsed time made by planes of 81 cu. in. engine displacement or under, will be presented by the Stout Aircraft Corporation.

Sponsored by the Detroit Air Board, Detroit Aviation Society, Detroit Adcraft Club, Detroit Board of Commerce, and the Detroit Flying Club, the National Air Tour of 1927 has the official sanction of the National Aeronautic Association and will be under the supervision of the United States Department of Commerce.

Any manufacturer or pilot interested in taking part or desiring further information is invited to write the Tour manager, Ray Cooper, Detroit Board of Commerce, Board of Commerce Bld., Detroit.

New Gas Cell Fabric

For a number of years, under grant from the Navy Department, the problem of obtaining a new type of gas cell fabric has been under investigation at the Bureau of Standards. During the past year this problem has shown great promise of approaching final solution. At the present time goldbeater's skin fabric is used to retain the buoyant gases in airships of the Zeppelin type. It is made by laying goldbeater's skins (the lining of one of the intestines of the ox) on rubberized fabric. The fabric so made is light in weight, durable, and has low permeability to the buoyant gases, hydrogen and helium, and to the chief gases of the atmosphere. The manufacture of a set of such cells, however, is a very expensive procedure inasmuch as it requires tedious hand labor throughout. Thus, for example, the cells of the Shenandoah required the hand laying of a half million goldbeater's skins. Furthermore, with the continued development of the Zeppelin type of airship, since the supply of goldbeater's skins is necessarily limited, it will become more and more essential to replace this fabric with some other type.

As the result of an extended investigation the Bureau has developed a fabric which promises to displace the goldbeater's skin fabric now in use. The new fabric is lighter in weight and of lower permeability than the goldbeater's skin fabric. The raw materials are available in unlimited quantities and as the coating can be applied as a continuous film by a mechanical process, the finished fabric is more uniform than the goldbeater's skin fabric and can be made at a relatively low cost. At the maximum, a completed cell made of the new fabric should cost less than one-half as much as a similar cell made of goldbeater's skin fabric. Furthermore, as the methods of manufacture are improved and cheapened, and, as greater qualities of the fabric are required even the present cost of manufacture can be reduced materially. However, using the present high estimate of production costs there can be effected in the mannufacture of the gas cells for the two new airships proposed by Congress a saving of approximately one million dollars, or one-ninth of the total estimated cost of these ships.

The production of this fabric has passed the laboratory stage and samples have been made successfully on a factory scale. The manufacture of a full-size experimental gas cell for installation in the Los Angeles is now under way.

Record Delivery to Philadelphia Airport

Among the interesting arrivals reported by the Ludington Philadelphia Flying Service at the Philadelphia Airport was one of the Ryan three place monoplanes built by the Ryan Airlines, Inc., of San Diego, California. It is the first of this type to make its appearance in the East and its arrival probably established a record for a long distance delivery of a commercial or pleasure airplane. The plane was piloted by Mr. Goss of the Pacific Air Transport who reported 26 hr. 10 min. actual flying time from San Diego and it is interesting to note that the plane came through the recent flood devastated area where even railroad transportation has been suspended.

The plane was delivered to Charles McBride, prominent broker of Philadelphia, who will use it exclusively for his own convenience and pleasure.

A Second Cairo-Capetown Flight

The British Royal Air Force is carrying out another flight from Cairo to Capetown, similar to one made last year, when three Fairey III D planes were used. Four Fairey III F machines are engaged on the present flight, the purpose of which is to investigate flying conditions through Africa.

LOS ANGELES MAKES THIRD FLIGHT OF YEAR

The Los Angeles completed its third flight of the year on April 16. The flight began at 10 a.m. and ended at 7:30 p.m. The airship maneuvered over Atlantic City, Long Branch and Asbury Park and circled over the flying field at Lakehurst, where it is quartered. During the week of April 25, the ship flew to Pensacola and back.

FOR THE NATIONAL GUARD

THE NEW CURTISS "FALCON"

A recent contract awarded by the Government will make available, this year, a quantity of Curtiss "Falcons" equipped with the Liberty motor, for use by the National Guard.

The "Falcon" has the highest performance of any two-seater military airplane in service today. Having thoroughly established its superiority by service tests extending over the past two years, it is now being purchased in large quantities as the standard service observation and attack plane of the Air Corps.

The equipment of the National Guard with the "Falcon" is in accordance with the far-sighted policy of the government in providing all branches of the service with the most modern of aircraft materiel.

THE CURTISS AEROPLANE & MOTOR COMPANY, INC.

Offices:
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The Close of a Great Achievement

Conclusion of the Pan-American Flight of the Air Corps Loening Amphibians Marks Outstanding Flying Event of Year

WITH THE arrival of the four Loening Amphibian planes, engaged in the Air Corps Pan-American Goodwill Flight, the St. Louis, the San Francisco, the San Antonio and the New York, at Bolling Field, on May 2, this outstanding 18,500 mile flight will come to an end. Starting from Kelly Field, San Antonio, Tex, on Dec. 21, Major Dargue, commanding officer of the flight, and his companions visited most of the principal cities of Central and South America.

Many Notable Hops

The flight was undertaken with the purpose of securing extensive cross-country flying experience for the Air Corps personnel and also to strengthen the friendly relations already existing between the Latin Americas and the United States. No attempt to attain speed records was made.

The flight included 100 landings, many in places where airplanes had never before been seen. The first flight ever attempted down the entire western coast of South America, followed by crossing the Andes at an altitude of 12,000 ft., was one of the achievements of the Pan-American fliers. In this latter stage of the flight the 650 miles were covered, without stop, in 5 hr., 40 min. On the eastern coast of South America, over 3,000 miles were covered in four days, 1,200 miles of this distance being flown in one day. The longest non-stop flight of the trip, a distance of over 800 miles, was made from Natal to Maranhao, Brazil.

Flying took place in all kinds of weather. At one time, when the squadron was near the Equator, it flew in close formation through a heavy rain-storm a few feet above water, because of the lack of visibility. Further on, the planes rose to 5,000 ft. to encounter favorable winds, directly opposite to those found near sea level.

The flight has demonstrated the practicability of travel by plane to spots in South and Central Americas heretofore considered inaccessible. Major Dargue reports the flight as rich in human interest and full of the friendliest possible meetings with the people and Governments of every country in the Central and South Americas. He has declared that exceedingly valuable technical experience has been gained including some important points regarding the employment of duralumin construction, such as are the hulls of the Amphibians, in salt water.

The various stops and landing dates on the flight are as follows: Point Isabel, Tex., Dec. 21; Tampico, Mex., Dec. 22; two planes at Vera Cruz, Mex., Dec. 27 and the remaining three Dec. 30; Minatitlan, and Salina Cruz, Mex., Jan. 1; Guatemala City, Guatemala, Jan. 2; San Salvador, Republic of San Salvador, Jan. 11; Amapala, Honduras, Jan. 13; two planes at France Field, Panama, Jan. 14 and three at Managua, Nicaragua, Jan. 15; all planes at France Field, Jan. 18; two planes remained at France Field, the other three at Barranquilla, Colombia, Jan. 23; two planes at Girardot, Colombia, Jan. 24; Cartagena, Jan. 26; France Field, Jan. 27; Buena Ventura, Colombia, Jan. 29; Guayaquil, Ecuador, Feb. 1; Paipa, Peru, Feb. 2; Lima, Peru, Feb. 3; Pisco, Peru, Feb. 6; Ilo, Peru, Feb. 7; Mejillones, and Santiago, Chile, Feb. 18; Valparaiso, Chile, Feb. 22; Talcohuano and Valdivia, Argentine Republic, Feb. 23; Bahia Blanca, A. R., Feb. 24; Mar del Plata, A. R., Feb. 25; Buenos Aires, A. R., Feb. 26 (It was here that the lamentable collision in the air occurred which resulted in the loss of two planes and the deaths of two of the personnel); Talcahuano, A. R., Feb. 28; Valdivia, A. R., March 1; Asuncion, Paraguay, March 2; Montevideo, Uruguay, March 4; Rio Grande de Sul, Brazil, March 8; Florianopolis, Brazil, March 9; Santos and Rio de Janiero, Brazil, March 10; Bahia, Brazil, March 18; Porto de Pedras, Brazil, March 19; Pernambuco and Port Natal, Brazil, March 20; Para, Brazil, March 21; Cayenne, French Guiana, March 25; Paramaribo and Georgetown, Dutch Guiana, March 26; Port of Spain, Trinidad, March 28; Puerto Cabelo, Venezuela, March 28; Port of Spain, Trinidad, April 4. An additional machine, with the two pilots who had been robbed of their plane in the accident at Buenos Aires joined the remaining three at Puerto Cabelo, Venezuela.

A Most Responsible Mission

In looking back over the memories of the Pan-American flight, it is impossible to be anything but impressed by the manner in which both pilots and planes caried through to success every mission for which they started out. The "humdrum", no doubt monotonous nature of the entire undertaking soon relegated the step-by-step flight news to the inside pages of the daily papers. Nevertheless, these ten fliers have been engaged in one of the most arduous and responsible missions of the Air Corps.

Gaining experience in the operation of service aircraft over long distances with the minimum of ground organization; accumulating experience of their own in air navigation over

[*Continued on page* 932]

The glider constructed by the German engineer Herr Espenlaub, which, attached by a cable to a power driven airplane, was towed to an altitude of 5000 ft. from which height Espenlaub cut loose and glided down at Cassel, Germany.

They used

AMOCO PRODUCTS

through the whole flight

THE Pan-American Good Will Flight was a triumph for AMOCO Products as well as for the men and airplanes.

AMOCO-GAS (Aviation Grade) and AMOCO Motor Oil were used throughout the whole flight from Kelly Field to Bolling Field by way of the Argentine.

AMOCO Products were shipped to seventy points in South and Central America and the West Indies, so that the Army Aviators would find fuel and oil of the highest quality available wherever they landed.

The completion of the Pan-American Flight marks an important step in the progress of American aviation — an achievement in which AMOCO Products played an important part.

We congratulate the Army Fliers on their courage, their skill and their success. And on the good judgment which led them to use AMOCO-GAS (Aviation Grade) and AMOCO Motor Oil exclusively!

AMOCO-GAS THAT IDEAL COMBINATION AMOCO MOTOR OIL

THE AMERICAN OIL COMPANY

AFFILIATED WITH

PAN AMERICAN PETROLEUM & TRANSPORT COMPANY AND ITS SUBSIDIARY MEXICAN PETROLEUM CORPORATION

BALTIMORE, MARYLAND

Doctor Ames: Chairman of The N.A.C.A.

Eminent Johns Hopkins Professor to Succeed the Late Charles D. Walcott As Chairman of National Advisory Committee for Aeronautics

DR. JOSEPH S. AMES, of Baltimore, was on April 22, elected Chairman of the National Advisory Committee for Aeronatics to succeed the late Dr. Charles D. Walcott, who died on Feb. 9, last. Along with Doctor Walcott, Doctor Ames was appointed by President Wilson in 1915 as one of the original twelve members of the Committee and has served continuously and without compensation. He has been a member of its Executive Committee for twelve years and Chairman of the Executive Committee since 1919.

The occasion was the semi-annual meeting of the entire membership of the National Advisory Committee for Aeronautics at which the following were present: Dr. Joseph S. Ames; Dr. George K. Burgess; Dr. William F. Durand; Brig. Gen. William E. Gillmore, U. S. A.; Capt. E. S. Land, U.S.N.; Prof. Charles F. Marvin; Rear Admiral W. A. Moffett, U.S.N.; Maj. Gen. Mason M. Patrick, U.S.A.; Dr. David W. Taylor; and Orville Wright.

Dr. Ames had just made his report as Chairman of the Executive Committee in which he described progress in aeronautical research and outlined plans for the future, when the question of filling the vacancy caused by Doctor Walcott's death was taken up and his election was unanimous.

Doctor Ames was born in Manchester, Vermont, in 1864. He received his A. B. degree from Johns Hopkins University in 1884 and his Ph. D. degree in 1890. After studying abroad, he was engaged as Assistant Professor of Physics at Johns Hopkins University and has been Professor of Physics since 1890. He became Director of the Physical Laboratory in 1901 and was recently given the additional duty of Provost of the University.

Doctor Ames is one of the foremost physicists in America and as such he was elected a member of the National Academy of Sciences in 1909 for "outstanding work in physics." He served for three years as member of the Council of the Academy and was one of the first members of the National Research Council which was organized by the Academy in 1917. He was chairman of the Foreign Service Committee of the National Research Council which visited France and England in May and June of 1917 to study the organization and development of scientific activities in connection with warfare. He is at present serving also as a member of the Executive Board of the National Research Council and is chairman of its Division of Physical Sciences. He is a member of the Fellowship Board of the Research Council for physics, chemistry, and mathematics, a member of the American Physical Society; a member of the American Geophysical Union; a member of the American Section of the International Union of Scientific Radio Telegraphy, and a number of other local and foreign scientific societies. He is the author of a number of articles and books relating to physics, electricity, and mathematics.

For the past eight years he has been Chairman of the Committee on Aerodynamics of the National Advisory Committee for Aeronautics and in this capacity has directed the preparation of research programs for the air services of the Army and Navy, the Langley Memorial Aeronautical Laboratory, and the Bureau of Standards, and has effected a practical coordination of effort among the governmental and private agencies concerned with the scientific study of various aspects of the fundamental problems of flight.

The Close of a Great Achievement

Continued from page 930

both land and water; proving the unsurpassed qualities of what is with little doubt one of the most outstanding airplane designs ever produced, and, last but by no means least, helping to further the already high esteem with which the United States and the South American Republics regard each other, Major Dargue and his companions: Capt. Arthur B. McDaniel, Capt. Ira C. Eaker, the late Capt. Clinton F. Woolsey, the late Lieut. W. Benton, Lieut. Ennis C. Whitehead, Lieut. Charles McK. Robinson, Lieut. Muir S. Fairchild, Lieut. Bernard S. Thompson and Lieut. Leonard D. Weddinton, have brought to a successful close one of the greatest flights in the history of modern aeronautics.

Change Chicago-Minneapolis Schedule

The Second Assistant Postmaster General, W. Irving Glover, has just announced a change in the flying schedule over the air mail contract route between Chicago and Minneapolis, Minn. The change will result in a later closing hour of mail pouches made up at the Twin Cities, Minneapolis and St. Paul. Effective April 18, 1927:

Leave Chicago 5:50 a. m., leave Milwaukee 6:50 a. m., leave La Crosse 9:30 a. m., leave St. Paul 11:30 a. m., arrive Minneapolis 11:40 a. m.

Leave Minneapolis 2:30 p. m., leave St. Paul 2:40 p. m., leave La Crosse 4:00 p. m., leave Milwaukee 6:35 p. m., arrive Chicago 7:30 p. m.

Frequency: Daily except Sunday and Monday westbound; daily except Saturday and Sunday eastbound.

The Lufthansa Gained During 1926

The flying operations of the German air transport company, Lufthansa, for 1926, show an increase of twenty-four per cent in mileage flown, over 1925. In the latter year the company's planes flew 3,075,719 miles, while in 1926 they covered 3,816,315 miles. However, during the first quarter of 1926, operations of this company were suspended; so that the period covered is for only nine months, against twelve months in 1925. July and August were the banner months, the distance flown during the former reaching 621,400 miles and during the latter slightly more than this figure.

Lufthansa reports an increase of 50.3 per cent in passenger traffic, about 115 per cent in freight and baggage and 86.4 per cent in postal traffic over 1925. Attention has been called to the fact that the night route from Berlin to Koenisberg had a specially heavy postage patronage, a total of 4,495 lb. of matter being transported over the night route from May 1 to Sept. 30. The regularity of performance is given as 90%.

On Oct. 16 the Lufthansa began regular Winter schedules, which reduced the operations by 39.9 per cent. The Winter schedule calls for service to ten foreign points, as compared with fifteen on the Summer schedule, and twenty-three domestic points, against fifty-seven covered during the Summer season.

Daily Service Between Pittsburgh & Cleveland

The frequency of service on C. A. M. No. 11, Cleveland, Ohio, via Youngstown, to McKeesport and Pittsburgh, Pa., effective April 21, 1927, has been changed to daily, instead of daily, except Sunday.

Again Pennzoil helps set a new world mark

Photograph from Roosevelt Field, Long Island, N. Y., shows Pennzoil being put in motor previous to record breaking flight.

"It's the best oil I ever saw coming out of a plane after a long flight"

G. M. BELLANCA,
designer of record making plane.

ACOSTA and Chamberlin trusted to Pennzoil—100% supreme Pennsylvania quality—in the record-smashing endurance flight of 51 hours, 11 minutes, 20 seconds that ended April 15 at Roosevelt Field.

4080 miles with a motor that never missed a beat! 4080 miles with only 4 and thirty-one hundredths gallons of Pennzoil consumed.

Pennzoil also lubricated the plane of Lieutenants Kelly and MacReady, who held the previous American record for sustained flight.

It made possible many other record performances in the air. There *is* no better oil than Pennzoil. There *can be* no better oil than Pennzoil.

THE PENNZOIL COMPANY
Oil City • Buffalo • Los Angeles • San Francisco
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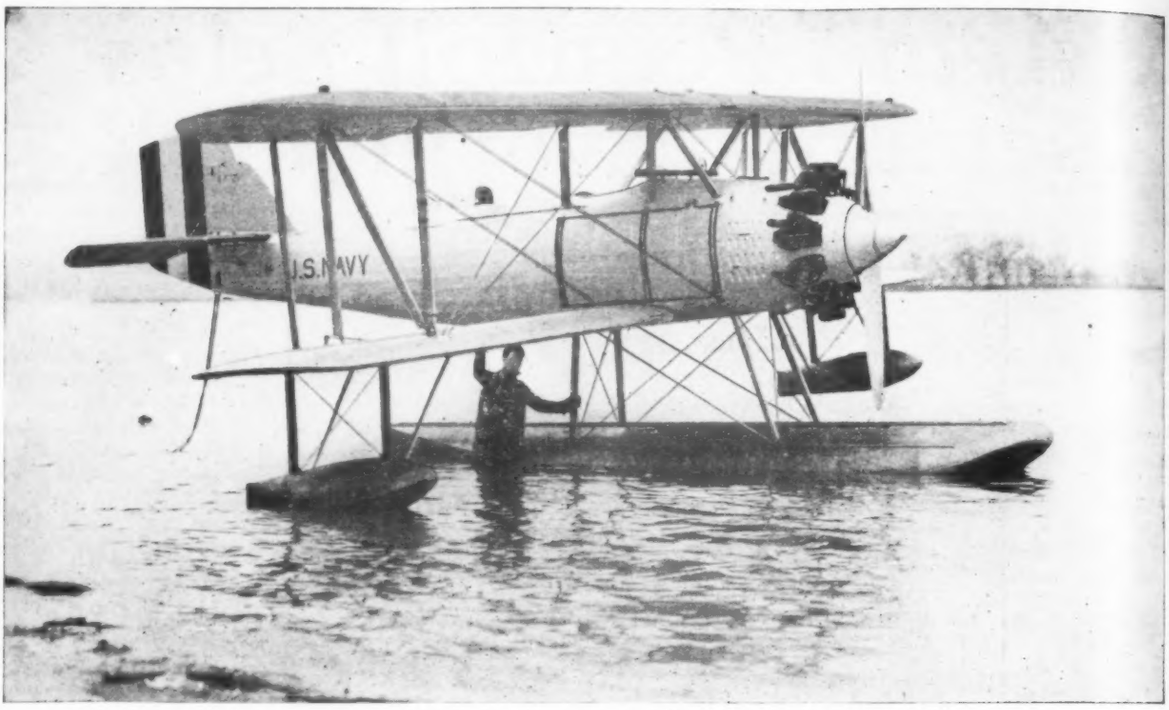
PAYNE EXPORT AND IMPORT CO., 150 BROADWAY, NEW YORK CITY
Foreign Distributors of Pennzoil, a PACO Product



The Vought Corsair as a seaplane (Pratt & Whitney Wasp)

The Vought Corsair Naval Airplane

A Two-Place Convertible Observation-Fighter with Single Seater Characteristics and Performance

THE VOUGHT Corsair (Navy designation Model O2U-1), is a high performance two-place Observation-Fighter, of the convertible type using interchangeable wheel-type or float-type landing gear. The plane will be used as replacement for the present Vought UO's, now accomplishing varied missions for the U. S. Navy.

The Corsair is a tractor biplane, powered with the Pratt & Whitney Wasp 400 hp. radial air-cooled engine. It was designed by the Vought engineering organization in cooperation with the Bureau of Aeronautics, and is the first plane built to meet the latest requirements of the U.S. Naval Air Service for two-place observation and reconnaissance machines.

Some measure of the versatility of the Corsair is readily obtained from mention of its wide range of service capabilities, including regular high-speed reconnaissance work as both land and seaplane, observation, two-seater fighting, and general cross-country work, in which services it may be catapulted as either a landplane or as a seaplane from the scout cruisers and battleships, and is further equipped to take off from land on the aircraft carriers.

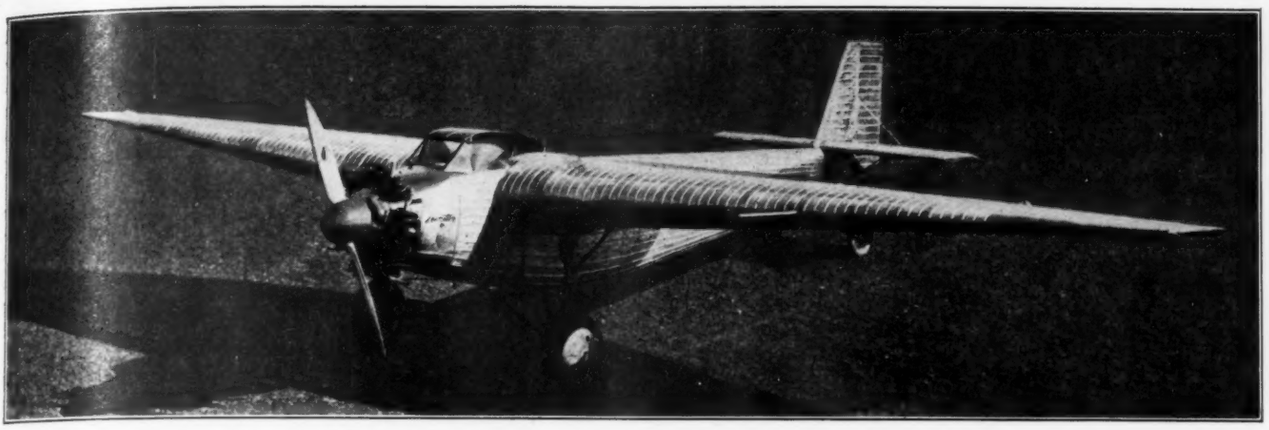
The first tests of the Corsair were made at Mitchel Field on November 2, 1926, and since that time the plane has been put through most exhaustive tests by the Navy Department's official Trial Board, first as a landplane, then as a seaplane, and then catapulted. In these official tests, with full load and with equipment and armament in place, the Corsair showed characteristics and performance comparable to service single-seaters, although it is of greater gross flying weight and carries a much larger useful load.

The Navy Department has withheld publication of the actual performance data on the Corsair, but the top speed may be said to substantially exceed that of present two-place service types, and to approach that of service single-seater pursuit types. The demonstrated low speed was much lower than specified requirements.

The official full-load climb in ten minutes exceeds that of present standard single-seater pursuit types, and equals that of the newest experimental single-seater fighters. The speed range, the ration of high to low speed, is particularly noteworthy, and on the order of 2.85, obtained under official full-load test conditions.

Perhaps the most interesting phase of the Corsair's performance is its actual ability to out-fly and out-maneuver present service single-seater and two-place types at high altitude levels. It will not fall out of tight maneuvers at service ceiling, and its service ceiling, as a seaplane, is said to exceed that of new single-seater fighters as landplanes.

The performance of the Corsair is all the more interesting when the limitations which are imposed by use of airplanes aboard the Navy's cruisers are understood. Such a plane cannot exceed certain definite overall dimensions and gross flight weight; it must have an extremely low, safe, minimum flying speed to take care of adverse conditions of catapult



HAMILTON METALPLANE

Designed to meet the demand for an efficient commercial cabin plane combining minimum maintenance with maximum usefulness over a period of years regardless of climate—assured by the use of duralumin construction throughout and powered by the Wright Whirlwind engine — especially adapted to South American requirements.

HAMILTON METALPLANE COMPANY

MILWAUKEE WISCONSIN U. S. A.

LIBERTY MOTORS

LARGE QUANTITIES SMALL QUANTITIES

LIBERTY PARTS

ENORMOUS SUPPLY RAPID DELIVERY

THE VIMALERT COMPANY, Ltd.

807 Garfield Avenue Jersey City, N. J., U. S. A.

Warming up the Wasp engine of the Vought Corsair.

launching; and must carry the maximum possible load with the highest possible performance. Also quick assembly and dis-assembly with rapid conversion from land to seaplane is necessary, requiring compactness and simplicity in the entire structure. Robustness and strength are essential since the planes are exposed to all conditions of weather and sea.

The biplane wing cellule is made up of a special Vought thick airfoil section for the upper wing, and a double cambered section for the lower wing. The cellule combines forward stagger with sweepback in the upper wing. This new arrangement gives, at all flying speeds, marked stability when combined with a judicious arrangement of the tail surfaces, and furnishes an exceptionally steady gun platform resulting in much greater accuracy of fire from both fixed and free guns.

Ease of Control

While the Corsair is extremely stable in flight, the control is particularly easy and the plane flies and maneuvers at the touch of a finger. It spins very rapidly and easily when put into a spin, yet it will not "flat-spin", nor has it any "autorotative" tendency.

In a properly designed airplane of this type, the use of Freize or Panther type ailerons to obtain precise and easy lateral control was definitely shown by this new Vought two-seater to be neither necessary nor desirable.

The Wing Arrangement and the disposition of the cockpits give unusually good vision, perhaps the best average vision for all purposes and with maximum arcs of fire for the free guns. Remarkbly good downwards and landing vision is possible from both cockpits, so that reconnaissance and "spotting" are greatly facilitated and accuracy in observation assured. The pilot can actually see the landing gear wheels and axle. If additional vision is desired for deck landings, however, the pilot's seat is provided with an automatic height adjusting device, making it possible instantly to adjust the seat in the air when coming in for a landing.

The wings are of standard Vought construction, built up with spruce beams (except in center section where steel beams are used), and ribs of plywood and spruce with Warren-truss stiffeners. The wing panels are fabric covered, and finished with Perry-Austen pigmented dopes.

The tail surfaces are of ample size giving positive control at all speeds, even below stalling. The tail surfaces are of welded steel tube construction, fabric covered like the wing panels, with pigmented dope finish. The horizontal stabilizer is adjustable in flight by a convenient hand wheel control in the pilot's cockpit.

The Cockpits

The comfort of the crew has been given special attention. Both cockpits are exceptionally long and roomy, affording unusual leg-room and comfort for both occupants. Cockpits are windproof and fitted with adjustable, non-shatterable glass windshields. Ingress and egress from both cockpits is remarkably easy, even when wearing a parachute. In addition to the adjustable seat noted above, the rudder bar in the pilot's cockpit is also adjustable for the comfort and accommodation of different pilots. The rear seat may be folded out of the

THE CORSAIR NOSE. The fine fuselage entry and neat cowling of the Pratt & Whitney Wasp engine, as well as the accessibility of fuselage mechanisms is clearly shown.

Recognition

DEPARTMENT OF COMMERCE
Joins the distinguished list of BUHL "AIRSTER" owners

HIGH
Performance
and
Factors of Safety

SUPERIOR
Design
and
Workmanship

"All around excellence prompted their discriminating selection"

BUHL AIRCRAFT CO.
MARYSVILLE, MICHIGAN

Form A-11

UNITED STATES OF AMERICA
DEPARTMENT OF COMMERCE
AERONAUTICS BRANCH

Official No.
AT-1

Approved Type Certificate

This certifies that Buhl Aircraft Company, Marysville, Mich. is entitled to the benefits granted by law in the production of airplanes manufactured in quantities of an exact similarity of type, structure, materials, assembly, and workmanship with the authenticated specifications, description, and drawings on file in the office of the Secretary of Commerce, duplicates of which are attached hereto and made a part hereof.

The type of airplane for which this certificate is issued is known as J-4 Airster

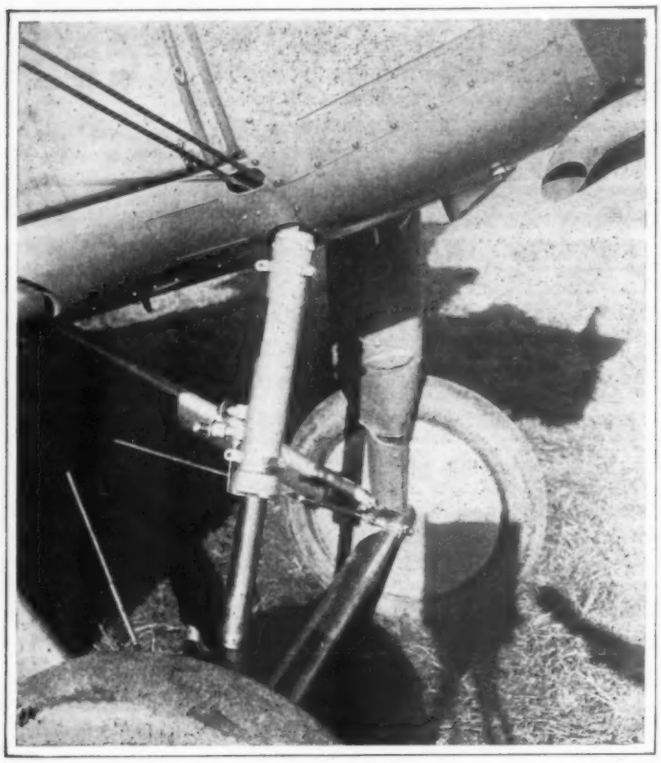
Dated March 29, 1927

All attached papers bear the seal of the Department of Commerce.

Wm. P. MacCracken, Jr.
Assistant Secretary of Commerce

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

Official
approved type
number
one



Undercarriage detail of the Vought Corsair, showing the Oleo-pneumatic compression strut, developed by Vickers, with the fairing removed.

way, and with the removable rear stick and arrangement of controls, gives an unobstructed gunner's cockpit for the operation of the free guns. The fuselage side fairing forms compartments on both sides of the rear cockpit for the convenient location of operating and special equipment, leaving the cockpit sides free from projections which might fowl a parachute. This feature is not possible, of course, in flat-sided longeron-faired fuselages.

The fuselage is of the tandem cockpit arrangement, carefully streamlined to reduce resistance. The fuselage frame is fabricated of chrome-molybdenum steel tubing, welded together, with proper "follow-through" eliminating butt welds at all important stations. Aluminum cowling is used on the fuselage from the rear cockpit forward, and fabric covering over the faired truss aft. Provision has been made for some control of engine cooling by means of suitable diaphrams in the engine cowling. Ample access doors are provided throughout the fuselage to permit easy maintenance of operating parts, and whole units of the cowling are quickly detachable for everhaul operations, fasteners which do not require any tool to open being provided.

Ample space is provided behind the rear cockpit for stowage of hoist sling, life raft, etc. Stowage for luggage is provided under the seat in the rear cockpit.

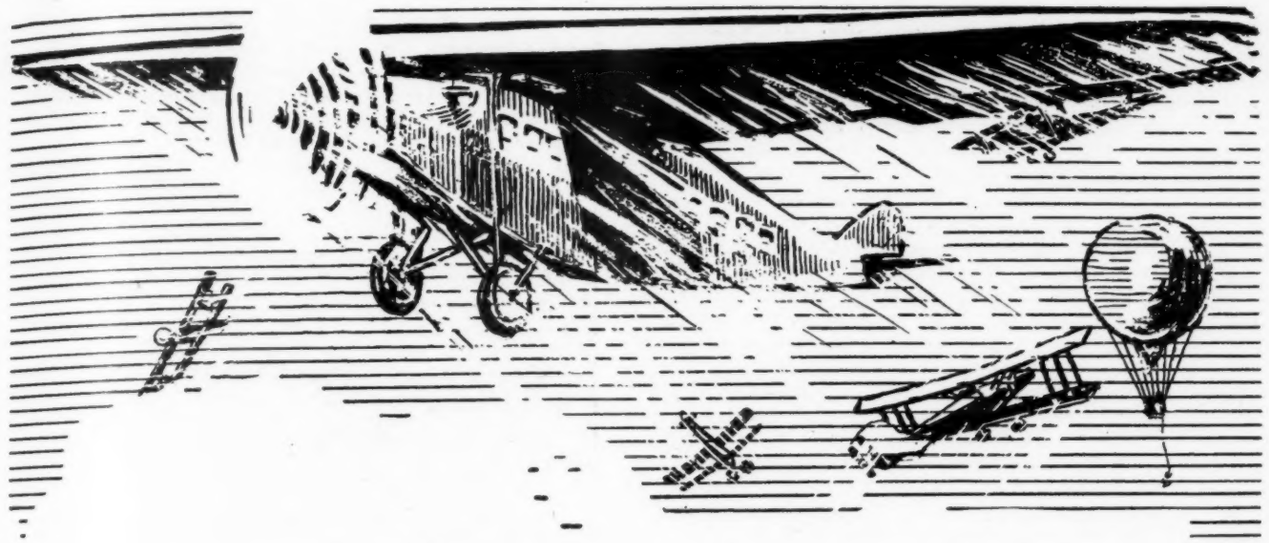
The Pratt & Whitney Wasp engine is mounted on a very simple engine mount built up of welded steel tubes and a pressed ring plate. All tube ends are reinforced and tongued, and the mounting is designed with all welds in shear. The simple construction insures reliability in service, and the mount is quickly detachable by the removal of only four taper attachment bolts.

The propeller used in this latest Vought model is of the two-bladed all-metal type and was manufactured for the Navy Department by the Standard Steel Propeller Company of Pittsburgh, Pa.

The fuel tanks are of the familiar Vought side type, fitting into the sides of the fuselage fairing, but in the case of the Corsair both tanks are duplicates and interchangeable—an important advantage when considering spare parts problems. The tanks are of unusually large capacity which, with the economy of the Wasp engine, gives the Corsair a large flight radius and makes it adaptable for long cross-country flights as well as long-distance reconnaissance work at sea. The oil tank is mounted behind the engine compartment fire wall. All tanks are fitted with large diameter filler necks with special filler caps, making it possible to refuel the Corsair very quickly. The fuel and oil system can be completely drained, as suitable drain cocks and plugs are located at the lowest points in the respective systems.

The Corsair wheel-type landing gear is of the pneumatic type with shock-absorbing units incorporated in the front legs. An oleo check acts as a stabilizer to control rebound of the air cushioning device. Over-size 32 in. x 6 in. wheels and tires are used and the wheels are enclosed in spun metal

The Vought Corsair as a land plane (Pratt & Whitney Wasp engine)



NATIONAL AIR TOUR

Sponsored by

Detroit Air Board — Detroit Aircraft Club
Detroit Aviation Society — Detroit Board of Commerce
Detroit Flying Club

DETROIT

JUNE 27, 1927

EDSEL FORD TROPHY
STOUT TROPHY
$12,000 CASH PRIZES

For detailed information, rule book and entry blanks, address

Ray Cooper, tour Manager

DETROIT BOARD of COMMERCE
Board of Commerce Bldg.
DETROIT

Sanctioned by National Aeronautic Society
Supervised by U. S. Dept. of Commerce

fairings. With this gear, smooth landings are possible even on very rough ground, and the long stroke air-cushioning reduces chances of breakage even in very bad landings.

The production Corsairs will be fitted with a slightly modified pneumatic-oleo landing gear providing split type axles, in combination with a jury cross-axle for deck landings on aircraft carriers. New type servo wheel brakes with mechanical control are provided.

The float-type landing gear for the Corsair is of special Vought design. It represents a very interesting and promising advance in seaplane engineering practice. This new gear is entirely of metal, and consists of a single central main float and two wing tip floats, all especially designed for catapulting and rough water use. With this new type gear, the Corsair lands very smoothly in smooth or rough seas, gets off the water quickly, and its performance as a seaplane very closely approaches that as a landplane.

Simplicity and serviceability have been designed into the Corsair through the experience of the Vought organization. This simplicity finds expression in small numbers of parts of robust design, intelligent selection of materials, and ingenious combinations. Serviceability is indicated in the fact that the test airplane, delivered last October and in constant service undergoing all manner of arduous testing since, has not had a single change, replacement, or modification made in it since it left the Vought factory, a remarkable record for a new model. Navy Department maintenance and servicing records on the Corsair show that both plane and engine have required only the regular routine field inspection and oiling.

The few working parts are all quickly accessible for maintenance and adjustment. Parts of the control system which are subject to wear are fitted with renewable hardened and ground stainless steel bearings and universals, with Alemite connections to insure easy lubrication. Ample cowling doors are provided, and with either side fuel tank removed (which can be done in a few minutes) complete access to cockpit mechanisms is conveniently provided. The lower wings have walkways at the fuselage ends to facilitate working on the machine, for filling of fuel tanks, armorings, etc.

The Corsair was designed and constructed to meet two-seater fighter strength requirements. It carries four guns, two of which are fixed and their installation and arrangement represent a very marked improvement over current ordnance practice.

With the great strength, performance and maneuverability of the Corsair, the Vought organization has developed, in cooperation with the Bureau of Aeronautices, an extraordinary new type airplane auxiliary for the scout cruisers and battleships, and have thus provided the U. S. Navy with reconnaissance planes capable of self protection against the most modern single and two-place fighters.

Stickers To Promote Use of Air Mail

As its contribution to the cause of the air mail, the Progressive Business Club, an organization of business and professional men of Detroit, Mich., is furnishing 250,000 stickers which can be placed on envelopes or letterheads.

The sticker is printed in three colors (red, white and blue), with a cut of a United States air mail plane, and the slogan which recently won first prize in the air mail slogan contest: Use Air Mail—One Dime Saves Time.

Requests for stickers are being received from Detroit business men, and are furnished by the Progressive Club free of charge. Pasted on the envelopes of outgoing mail, such stickers carry the message of the air mail to thousands of people all over the country.

Postmaster Charles C. Kellogg of Detroit has given his full approval to the use of the sticker. It can be used either on the front or the back of envelopes, so long as it does not interfere with the address or the postmark.

A supply of air mail stickers will be sent, without charge, to anyone who will use them. Requests should be directed to E. A. Miller, president, Progressive Business Club, in care of Union Trust Company, Detroit, Mich.

Activities of New England Aircraft

The year 1926 was the most successful the New England Aircraft Company, Inc., of Hartford, Conn. has yet had. In a survey of its activities the company finds that forty-seven students enrolled for the flying course during the year, all of whom are still with the school, several publicity stunts for local merchants, which attracted wide attention and which proved highly successful, were performed, as well as photographic work of diverse types.

Albert L. Burnham, sixteen year old boy who has secured his pilot's license under the instruction of the New England Aircraft Co., Inc.

As agents for the Waco, the company sold seven of the Model 9 during the year and has received orders for two of the Model 10 for early Spring delivery.

Operations were suspended from Dec. 15 to March 1, owing to weather conditions.

One of the outstanding achievements of the flying school was the graduation and licensing as a pilot of Albert L. Burnham, a seventeen year old boy, of Hartford, Conn. The young pilot first became interested in aviation at the age of fourteen, finally enrolling in the New England Aircraft Company's school. Under P. H. Spencer and Ralph C. Barrows, he rapidly learned the technique of flying and obtained his license to pilot a plane.

Fourteen National Balloon Race Entries

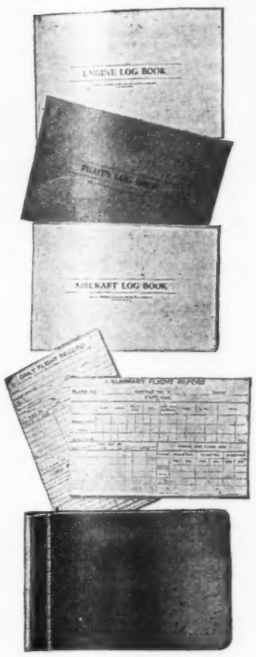
Fourteen balloons composing the largest field of starters in a National Balloon Race in recent years are entered in the American Elimination Race from Akron Ohio, May 29.

The United States Navy will again be represented in this national event after three years non-participation, and the U. S. Air Corps is entering four balloons, in addition to seven civilian entries from Detroit, Akron, and Los Angeles. The field to be used for the start is inside the oval of the Akron-Cleveland Speedway, five miles from the center of the city and will afford seating facilities for more than 25,000 people. A program of heavier-than-air activities will precede the take-off of the racing balloons, the Air Corps and the Bureau of Aeronautics cooperating with the Akron committee in making these events possible.

An aeronautic ball and a civic banquet will be given on Friday and Saturday nights preceding the race in honor of the race pilots and aides and visiting fliers from the service fields. The Akron race is under the auspices and direction of the Akron National Balloon Race Association composed of Akron business and professional men. C. W. Seiberling, president of the Akron Chapter of the National Aeronautic Association, is Race Association president; W. C. Young, aeronautic manager for Goodyear is vice-president; H. W. Maxson, member of the 1926 James Gordon Bennett team, is secretary and race manager. The P. W. Litchfield trophy will, of course, be at stake in the coming race.

APPROVED LOG BOOKS

Aircraft - Engine - Pilot Flight Record Cards



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Aluminum binders for sets of 3 books. You can't afford to be without these records for government inspection and for the valuable operating information they will give you.

Every Pilot, Ship, and Engine must have a log book—how many shall we send you?

PRICES

Flight Record Cards	$.25 per dozen
Aircraft Log Books	.75 each
Engine " "	.50 "
Pilot's " "	.50 "
Set of 3 " "	1.50 per set
Aluminum Binder for Set	1.80 each
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Rebuilt from New Planes Purchased in Original Crates from U. S. Army

Fuselages are rebuilt from nose to tail; new longerons, instrument boards, new seats, new landing gears, etc.; reconstructed wings; new fabric throughout; six coats of freshly manufactured Nitrate dope, and natural color finish. Aluminum cowls are painted a light blue. We guarantee these planes to pass the Government test. Each airplane is carefully inspected and given a severe test flight before delivery.

Come to St. Louis and go through our shops and convince yourself that this is one company actually rebuilding Standards into first class modern planes.

We sold 83 of these Standards last year, and a large percentage of them were powered with the OX5 motor. All of the fuselages are reconditioned so as to accommodate two passengers in the front seat and a pilot in the rear. The Standard airplane with OX5 motor installed will carry one passenger in the front seat and a pilot in the rear. With the OXX6 100 H.P. Hispano-Suiza 150 H.P., or Curtiss K-6 150 H.P. motors two passengers in the front seat and a pilot in the rear can be carried.

Read this bargain list of Standards and other Quality Planes

New Standard J.I. airplanes, without motor; fuselage and tail members uncovered $650.00

New Standard J.I. airplane, completely covered, set up, but without motor 750.00

New Standard J.I. airplane, with Government overhauled OX5 motor installed, two place ship—(our best seller) .. 900.00

New Standard J.I. airplane, with absolutely new OX5 motor installed 1200.00

New Standard J.I. airplane, with brand new Curtiss OXX6 100 H.P. motor, three place 1300.00

New Standard J.I. airplane, with Government overhauled OXX6 100 H.P. motor, three place 1200.00

New Standard J.I. airplane, with guaranteed overhauled Hispano Suiza model A, 150 H.P motor, 3 place ship .. 1350.00

New Standard J.I. airplane, with guaranteed overhauled Model I. 150 H.P. motor installed, three place 1500.00

New Standard J.I. airplane, with guaranteed overhauled Model E, 180 H.P. Hispano Suiza motor installed, 3 place 1500.00

New Curtiss Orioles, 3 place, without motor 1750.00

New Curtiss Orioles, with Curtiss K-6 motor 150 H.P. installed, 3 place 2000.00

New Curtiss Orioles, with practically new Hispano Suiza model E, 180 H.P. motor installed, three place 2000.00

Completely reconditioned D H. airplane, wings and tail members recovered, less motor 1000.00
With guaranteed overhauled Liberty motor 3000.00
With brand new Liberty motor 7500.00

T.M. Scout airplane, complete with new 80 H.P. LeRhone motor installed 650.00
Complete with OX5 motor 1000.00

Spad Scout plane, which we consider much better than the T.M., or T.M. Scout as it has better performance, and is constructed much better, less motor 200.00

These Spad airplanes are single seater fast Scout planes, and are in good condition but need recovering. Some of the wings need minor repairs. To close these out we are selling them at cost. The motor is for the 150 H P. Hispano Suiza motor It can be changed over to accommodate the OX5 motor—planes crated f.o.b. cars at our warehouse at San Antonio, Texas less motor 200.00

Reconditioned Curtiss JN4D airplane, with guaranteed overhauled OX5 motor 750.00
without motor 500.00
with Hispano Suiza motor installed 1250.00

Reconditioned and recovered Canuck, with guaranteed overhauled OX5 motor 900.00
with brand new OX5 motor installed 1200.00

We have a special built Canuck with all lower wings finished in pigmented aluminum, blue cowls, that flew about 20 hours, which is a bargain at 1000.00

We have a few used Standard J.I. airplanes with motors at 650.00 ready to fly away in good airworthy condition.

Write for Free Catalogue of Our Flying School

Robertson Aircraft Corporation

Lambert—St. Louis Airport, Anglum, Mo.

Vought Planes Added To Coast Guard Service

Vought Type UO-4 Well Suited to Coast Guard Service. Planes Equipped with Guns and Radio

LIVELY PREPARATIONS are reported at the various U. S. Coast Guard bases along the Atlantic coast for the annual Spring offensive against Rum Row.

The recently acquired Vought Model UO-4 seaplanes will play a very important part in this drive. These planes, designed and built by the Chance Vought Corporation, were especially designed and equipped for this special type of work, and were among the initial aircraft purchased directly by the U. S. Coast Guard under its own first Air Service appropriation.

Several years ago, as a try-out to ascertain the possibilities of off-shore airplane patrol against rum-runners and smugglers, the Coast Guard borrowed some standard Vought UO catapult seaplanes from the Navy Department. These borrowed Voughts have been in continuous operation for two years, and the results obtained, coupled with the splendid reliability and operating record made by the planes, convinced the Treasury Department officials of the necessity and economy of developing a sizeable air force within the Coast Guard as "eyes" and as the ablest intelligence service, for its surface craft patrol.

Planes Especially Equipped

These special Vought Coast Guard planes incorporate many novel features which are particularly valuable in this difficult service. These Voughts have extra large fuel and oil tanks, providing a 35 per cent greater radius than in the planes previously employed for this work. Browning machine guns are also fitted, and the Coast Guard has installed a special long-range radio sending and receiving set to maintain contact with its surface patrol craft and coastal stations when the planes are many miles at sea on observation missions. The engine is a Wright Whirlwind J-5, 225 hp.

A considerable improvement in performance has been obtained by the use of the new Navy N-9 wing section. The airplanes have been designed with two-seater fighter factors of safety, instead of the lower factors usually specified for observation airplanes.

Many changes and modification in arrangement and accessories are in evidence, the better to adapt the planes to the special needs of the Coast Guard. UO-4s show the usual high standards of workmanship and finish which has always made Voughts stand out in any company. The fuselages are beautifully faired, disclosing unusually clean lines. The new wing cellule has many changes tending to increase the speed and range of the planes.

The external finish is a bright chrome-yellow enamel and pigmented dope, with black striping and upholstery, which, with the Coast Guard identification and markings in black letters, makes a very striking color combination. This color scheme renders the planes easily distinguishable at sea and differentiates them from regular Naval seaplanes.

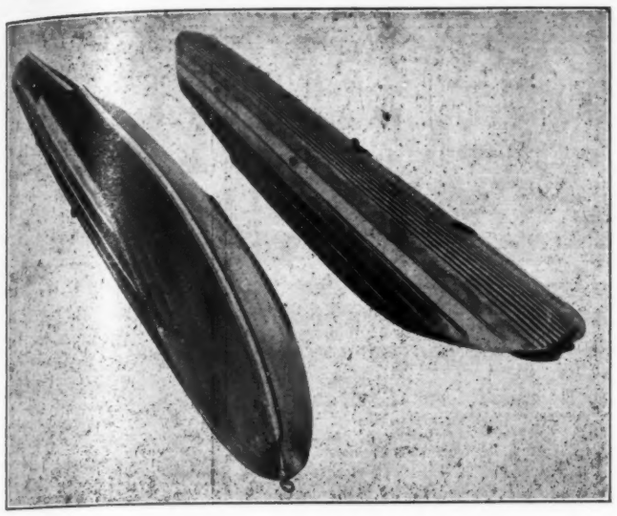
The seaplane problem has been simplified and exceptional sea-worthiness and extra strength have been provided for the rigorous use to which the Coast Guard plane equipment must be subjected by the use of standard Vought Navy type catapult float gear. This water landing gear consists of a very strong single central float, supporting the airplane by streamline sectioned tubular steel struts and brace wires, and a pair of strut mounted outboard floats, one under each lower wing tip. This seaplane landing gear had been given extensive service tests in the 1925 and 1926 operation of the Vought planes by the Coast Guard, and it had very conclusively proved its ability to withstand all manner of service abuse, coupled with the ability to take off from, and land in, rougher seas than many other service planes. Its unsheltered water operating capabilities and the high degree of reliability actually proved in rigorous patrol service by Vought planes, were determining factors in the decision of the Coast Guard to include in its first aircraft order under its own air service appropriation, for these special type Vought UO-4s.

The use of Vought planes in the U. S. Coast Guard adds but another difficult phase to the diversified services now being accomplished so successfully by these sturdy, standardized planes, the reliability and serviceability of which are too well known to require comment.

The Rome-Munich Air Service

Air service between Rome, Milan, Trento and Munich has been planned and this project is now being negotiated. It is expected that definite arrangements will be made soon and that the Italian Government will be requested to grant a concession for the operation of the service. It is rumored that the Aero Lloyd Italiano is considering the project and the concession for the route.

The Coast Guard Vought No. 5 seaplane which is attached to the Gloucester Section Base and used as the "eyes" of the Coast Guard patrol against smugglers and rum-runners. The machine is a Vought UO-4 with Wright Whirlwind J-5 engine.



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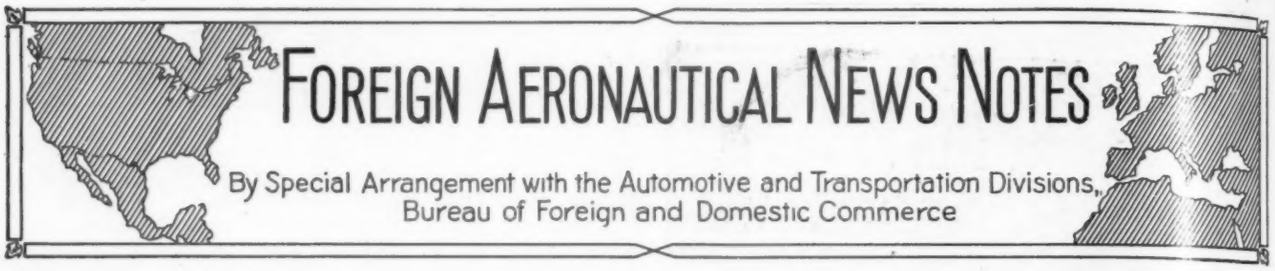

FOREIGN AERONAUTICAL NEWS NOTES

By Special Arrangement with the Automotive and Transportation Divisions, Bureau of Foreign and Domestic Commerce

Cherbourg as Air Station

Negotiations for the nse of Cherbourg, France, as a commercial air station are proceeding between the British and French authorities. It is the intention of Imperial Airways, Ltd., to extend the air services between Southampton and Guernsey to Cherbourg, so as to link up with the sailing of the trans-Atlantic liners. The usual weekly service operated between Southampton and Guernsey has been maintained regularly through the Winter, and it is proposed to make the service bi-weekly this summer. Trips to Cherbourg are made occasionally from the Woolston Airport, with special permission of the French authorities, in cases of urgency or emergency, such as a passenger missing his ship at Southampton. The new route, when officially sanctioned by the Governments of the respective countries, will be of immense value to travelers between London and New York. It will save a full day both on the inward and outward journeys, and the fare will be a moderate one.

Proposed Argentine-European Mail Services

A contract was recently signed between the Argentine Director General of Mails and Telegraphs and the Compania de Transportes Aereos Latecoere, a French company, providing for the establishment of an air mail service between Tolosa, France and Buenos Aires. Under the contract the service must be inaugurated by Sept. 1 of the present year.

The route to be covered is from Tolosa to Casablanca, Morocco, by airplane, 1,147 mi. estimated to be covered in 13 hrs.; Casablanca to St. Louis del Senegal, by plane, 1,767 mi. in a day and a half; Saint Louis to Cape Verde Island, by plane, 476 mi. in 5½ hrs.; Cape Verde Island to Fernando des Noronha Island, by special fast steamer, 1,364 mi. in three days; Noronha Island to Pernambuco, Brazil, by plane, 402 mi. in 5 hrs.; Pernambuco to Rio de Janeiro, by plane, 1,208 mi. in 14 hrs.; Rio de Janeiro to Buenos Aires, by plane, 1,302 mi. in 15 hrs. Thus a through service of 7½ days over a total distance of 7,688 mi. is promised. It is claimed that more rapid service will later be given with the inauguration of night flying and the substitution of planes for steamers in the Cape Verde to Noronha Islands stage. A weekly service each way is stipulated in the contract.

Chile Inaugurates Air Mail Service

Chile's first air mail service was inaugurated recently for the transportation of foreign postal pieces between the port of Valparaiso and Santiago.

The innovation is said to be of great importance to business houses in the Chilean capital, for under previous conditions all correspondence from that point for foreign countries had to be mailed the day preceding the mail steamer's departure for Valparaiso. Under the new system, the Santiago post office will not close the mail until the morning of the day on which the steamer sails. A further advantage is that mail from abroad will be distributed in this city a few hours after its discharge from the ocean mail carrier.

The news of the beginning of the new service has been received in Chile with the widest public approval.

Cross Alps Seventy-five Times

On the Venice-Vienna air line a technical regularity has been kept of 99.5 per cent of the last four months of 1926. Two of the pilots, Pasquali and Bianchina, have crossed the Alps seventy-five times.

Civil Aviation Progresses in Canada

Civil aviation in Canada registered a marked increase in 1926, as compared with previous years. Statistics were taken from reports submitted by all aviation organizations in Canada, except the Royal Canadian Air Force and a few aircraft owned by individuals.

In 1926, 4,755 flights were made, as against 3,171 in the preceding year. Flying hours increased from 4,091 in 1925 to 5,860 last year, an increase of about 43 per cent. In 1926, 6,436 passengers were carried over 631,715 miles, as compared with 4,897 passengers and 446,648 miles the year before. In 1926 freight traffic amounted to 724,721 lb., as against 592,220 lb., the previous year. These figures include apparatus carried by the Provincial Air Service in Northern Ontario.

Aerial survey companies photographed 20,921 sq. mi. in 1926 and 3,167 in the previous year. Air patrols protected 105,000,000 acres in Northern Ontario. Timber type mapping by sketching was done over 22,295 sq. mi.

France-Argentine Air Line

In an interview given at Toulouse recently officials of the French aviation company, Latecoere, stated that they had signed a ten year contract with the director of Communications of the Argentine Republic for creation of an aerial transport line with weekly service between Europe and Argentina. Under the terms of the contract the service must begin by September 1, 1927, but it is expected in France that the first flight will be under way by July.

The Latecoere company officials made the following statement: "Beginning Sept. 1, 1927, our lines will be in operation between Toulouse and Buenos Aires, making the one-way trip in about nine and a half days. Because of the lack of perfected seaplanes, the line will not be entirely aerial at the start, and the crossing of the Atlantic to the island of Noronha (2,000 miles) will be made in fast steamers.

"In 1928 a complete aerial service will bring Buenos Aires to within four days of Paris. The technical preparation of the lines is entirely terminated. The route to be followed will be: Toulouse-Casablanca-Dakar-Cape Verde-Moronha-Buenos Aires.

The Compania de Transportes Aereos Latecoere is reported to have a subsidy from the French Government of 36,650 francs for its total operations the first year on several lines which it plans to establish. No subsidy had been requested from the Argentine Government.

The French company claims to have ready for use in this service 200 airplanes, forty seaplanes, nine 1,000-ton steamers, with a speed of 22 knots per hour, and 156 trained pilots. It is assumed that this refers to the entire organization of the company which is operating, or planning to operate, elsewhere as well.

Australian Air Service

More than 4,000 passengers were carried by the Australian commercial air services during the last fiscal year ended June 30 without a single fatality. The total milage flown during the year 1925-26 was 481,800 which was an increase of about 55,000 miles over the previous year.

In New South Wales airplanes carried 411 passengers; in Victoria 3,708; in Queensland, 965; and in South Australia, 383. In each of the States named, except Queensland, there were accidents, involving damage to the plane.

More than 270,000 letters were carried in 1925-26 by Australian airplanes and 63,000 lb. of freight.

LUDINGTON PHILADELPHIA FLYING SERVICE

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THE ONLY COMMERCIAL FIELD WITHIN CITY LIMITS

Genuine
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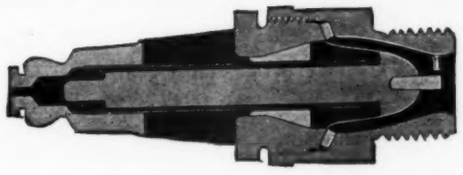
Wide Vision — Adjustable Bridge — Curved Lens — Very Comfortable
Single Lots $5.00 — Lots of 6 $4.50 — Lots of 12 $4.00 — Lots of 25 $3.75 — Lots of 50 $3.45
Complete line of all standard makes of goggles and lens carried in stock for immediate shipment.

NEW PRODUCTION "BG" SPARK PLUGS

BE SAFE
USE B.G.
SPARK PLUGS
Thoroughly Reliable



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Nicholas Beazley Airplane Co., Inc.
MARSHALL MISSOURI

We Will Be Here Tomorrow

Side Slips

By ROBERT R. OSBORN

If we may be pardoned for commenting on news as old as that pertaining to the unfortunate accident to Commander De Pinedo's flying boat, we would like to say that it must have been a sad blow to one of our favorite writers, Mr. Jay E. House, whose daily column of comment and humor appears in numerous metropolitan newspapers. It is the pet theory of this gentleman, expounded and enlarged upon in his writings, speeches and conversation, that no cigarette was ever responsible for starting a fire, in spite of the ascribing of such responsibility so frequently by the newspapers, fire-wardens and anti-tobacco societies. Mr. House's whole argument is based on the fact that in the thirty years of his newspaper career he has been throwing matches, cigars and cigarettes in waste-baskets full of newspaper clippings and oily waste, and has never started a fire. In the De Pinedo mishap, a boy threw a match in a lake, which should be the safest place in the world to throw a match, and burned up a hundred thousand dollar airplane. It will be interesting to see how Mr. House accounts for this incident when he again comes to the defense of the cigarette.

• • • •

We fear that The Intrepid Aviator has become a little out of control since he has been on several trips away from our watchful eye. Mr. R. H. J. writes in to say that he saw him at a Detroit flying field delivering an oration to some of the open-mouthed citizens of that locality. In the part of his speech overheard by Mr. R. H. J., The Intrepid Aviator was claiming that he had the steadiest hand, the sharpest eye and strongest nerves in four or five continents, and that he always sharpened his razor blades with the tips of the metal propeller on his plane, while the mechanics were warming up the engine. He also informed his audience that the Curtiss-Reed props were best for razor blades, but that Standard Steel props were ideal for finger nail clipping.

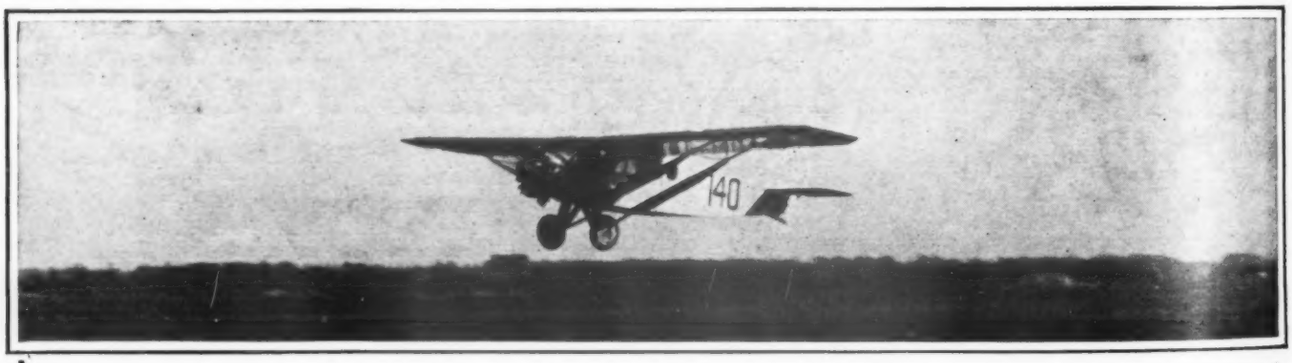
• • • •

When The Intrepid Aviator paid his most recent visit to our office he called our attention to the fact that there would shortly be a great shortage of birds, meteorological disturbances, and astrological bodies, for which airplanes and engines could be named. He pointed out, in great detail, that nearly all known names had been used up, and stated that he was planning an expedition shortly in search of new material. He said that about the only bird left for the manufacturers was the Long Island Duckling, which was not very desirable, as it had poor climb characteristics and ground-looped badly on landing.

• • • •

Most of the people with whom we have discussed the proposed Trans-Atlantic flights, are of the opinion that the average flier wouldn't need a navigator with him,—that with a good plane, plenty of gasoline and all of the attractions that Paris has to offer, he couldn't possibly miss his destination.

Mr. G. A. P. reports an unusual accident to himself at one of the eastern flying fields, which shows that a high factor of safety is not always desirable. At the field's commissary department,—the ice cream and soft drinks shack, he purchased a pie and, after discarding the tin plate which came with it, proceeded to eat it. It wasn't until he reached the last quarter section that he discovered that the pie baker had also provided a cardboard plate with his product.



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Pitcairn Orowing at our factory price of $2000 represents maximum value for your money. We know this to be a fact. Therefore we welcome your proving it to your own satisfaction by thoroly investigating our company and our product.

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In all of our advertising we have stated that the Pitcairn Orowing is distinguished by remarkable inherent stability, steadiness, ease of control and excellent performance. An actual demonstration will convince you that we have in no way overstated the facts.

Complete description on request

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AIRPLANES MOTORS SUPPLIES FLYING BOATS

New JN4D dandy condition $1250. Slightly used JN4D $975. Moderately used JN4D very good condition $875. Good used Canadian Curtiss airplane $750. J-1 Standard unused less motor and motor equipment $750.

Complete set tools for OX5 or OXX6 $10.90. Hispano tools: Cam cover wrench $1.50; jet wrench 50c; cylinder stud nut wrench $3.85; propeller hub nut wrench $3.75; spanner wrench $2.25; valve tappet socket wrench slightly used $2.50; connecting rod wrench $3.90; valve adjuster wrench $2.00; valve lifter wrench $6.00. Timing disc and scale $5.00.

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Metal or bamboo wing skids for Canuck or JN4D $1.50 each. OX5 piston rings, high compression 15c or over-size 20c; for OXX6 30c; OX5 piston $2.00; piston pin 50c; connecting rod bearing per half 50c complete set hose for OX5 or OXX6 $1.25; complete set hose clamps for OX5 or OXX6 $2.50. Navigation lights, one red, one white, one green, $7.50 per set. New fire extinguisher, charged, with bracket $10.00. JN4D foot bar front to rear connecting wire 50c; front or rear pilot stick $1.50; rudder control cable assembly, per side $2.80; Aileron control cable assembly (overhead) $5.50 for 2 wires; Aileron control cable assembly stick to Aileron $3.00 for each wire. ½" striped shock absorber cord 30c yd.; new fresh shock absorber cord ½" 50c yd. or ⅝" 75c yd.

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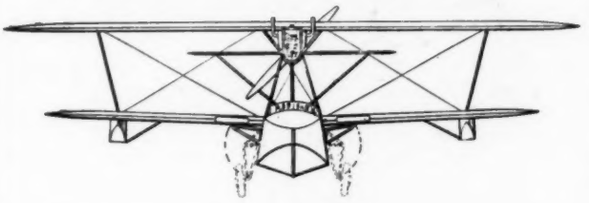

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AIRPORTS AND AIRWAYS

Bettis Field, Pa.

By Dean Ivan Lamb

Salesmen of everything from hangars to grass seed, embryo students, parachute jumpers, kiwis, reporters, photographers, modocks, concession hunters, Orioles, Jennies, robins and Spring drifted into Bettis Field during the last ten days with no preliminary warning.

Among the concessionaires was "Hap" Slater, an old-time pilot, now famous as a hot dog expert and noted sausage strafer, who secured the restaurant concession and is now erecting a real "eat" shop, with reading and rest rooms included. "Hap" knows the flying game so well that it is going to be a difficult matter to obtain credit.

All preparations have been made to handle the air mail planes. The runways are ashed, rolled and the hangars are completed, including a set of offices and storerooms. Bill Stout is expected to attend the inauguration services of the air mail with a three-engine "Tin Goose." This type may later carry mails or passengers from here.

On the evening of April 21, a banquet was given at the Penn-McKee Hotel to celebrate the opening of the Cleveland-Youngstown-Pittsburgh Air Mail. The guests were addressed by William P. MacCracken, Jr., Assistant Secretary of Commerce for Aeronautics; Irving W. Glover, Second Assistant Postmaster General; Congressman Clyde Kelly, and others.

The personnel of the Cleveland-Youngstown-Pittsburgh Air Mail is as follows: Clifford Ball, of McKeesport, contractor; Arthur J. Lynch, of Youngstown, traffic manager; Merle Meltrup, of Pittsburgh, chief of operations and pilot; Dewey Noyes, of Pittsburgh, pilot and chief mechanic; Kenneth, "Curley", of Pittsburgh, reserve pilot; William Livingood, formerly of McCook Field, chief mechanic at Pittsburgh. Reserve planes will be kept at all stops on the route.

L. R. Tower, piloting a Boeing training plane from Washington, D. C. to Seattle, Wash., stopped in for the night to make minor engine repairs, and proceeded to Cleveland the following morning. A Richardson portable hangar, 72 by 40 ft. is being erected to house the planes that are now in small temporary hangars, pending the completion of the large steel hangar. The east and west runway is now in use, having been closed for several days to permit the laying of a large gas main.

Lieut. R. C. Breene, from Wilbur Wright Field, with a Douglas transport loaded with propellers, was delayed two days on account of minor repairs. These were made at the field and he flew to Washington. Eddie Stinson, in a Stinson Detroiter, landed here the evening of April 16, where he met William P. MacCracken, Jr., Assistant Secretary of Commerce for Aeronautics, and they flew to Washington.

The Swallow owned by Clifford Ball, air mail contractor, has been reconditioned and is to be used as the service plane on the mail route. D. Barr Peat, the field manager, graduated from the Fordson class to the steamroller. He succeeded in stalling it three times in one afternoon, but was unable to crack-up. Jimmie Clauson is having his Jennie overhauled

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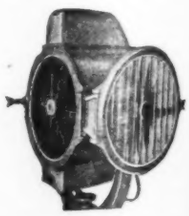

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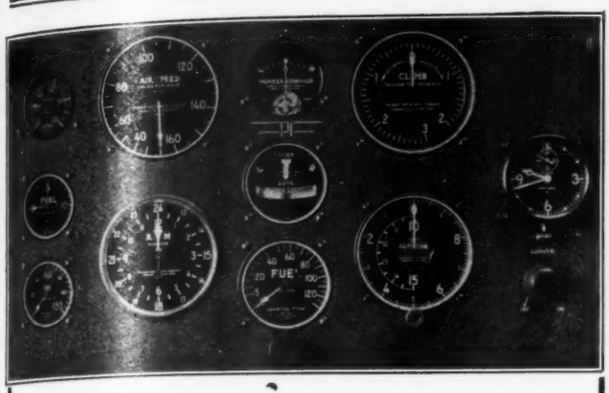

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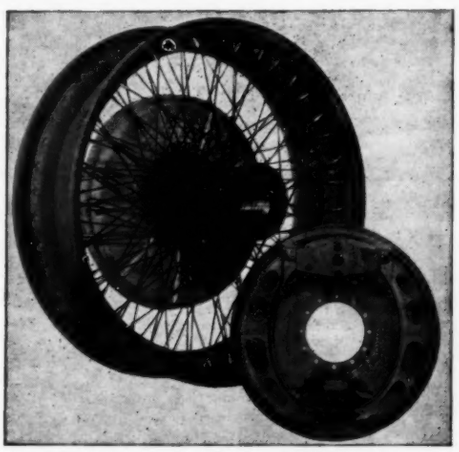

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by the Ground School Department of the Lovejoy Flying School. He intends to carry passengers as soon as the bell rope and fare box are installed.

Lieut. George Tourtellot, piloting a Douglas, came in to show the gang how a real plane looks, and incidently to learn the meaning of a real airport. "Bo" Phelan has been appointed assistant field manager and after only two days demonstrated his flying ability by making a solo on the Fordson. Bets are being laid that he beats the time of Barr to reach the steamroller stage.

Lieutenant McCune, from McCook Field, came in pushing a D. H. on an inspection tour of the National Guard planes in Pittsburgh. The Spring class of the Lovejoy Flying School is practically filled with local students and in all probabilities the equipment will be increased to meet the demand. The field has been generally cleaned up, all trees and brush on the edges have been removed, giving clear approaches to all runways. Ambrose Stampo, one of the students, is building a lightplane around the Harley Davidson engine.

Moline, Ill.

By W. B. Mueller

After a Winter in which the flying business was none too prosperous, Moline Airport has revived and crowds at the field on Sundays and some weekday afternoons again reach the hundreds, and sometimes thousands. On Sunday, April 9, there were more than 5,000 spectators at the field.

Pilot Rusty Campbell gave a demonstration flight with the Campbell-Deschepper Airplane company's new six-passenger Travel Air monoplane and found difficulty in accommodating all who wanted to ride. Three years ago some one at the airport, which then was a struggling enterprise, declared he would not ride in one of those "darn contraptions" for $10 a minute. But time changes people's ideas. Crowds swarmed about the plane this Spring when Rusty made his trial flights, and offered everything but their hats and shoes for a ticket to go skyward.

Campbell is said to be going to start an air line between Moline and Chicago in the very near future. He will operate once a week at first, probably, but it is quite likely that the service will become a daily proposition in a year or two.

In order to go to Chicago from Moline by train one has to take a train at 10 o'clock at night, get to the Windy City some two or three hours later, try to find a hotel room, and then retire to awaken early in the morning. To return from Chicago one leaves that city about 8 o'clck at night and reaches Moline around midnight. Thus two nights are wasted.

With the Travel Air monoplane, however, one can leave Moline at 6 o'clock in the morning, for instance, spend the entire business day in Chicago and return to Moline by 8 p.m. Or, with the lighted airway now in operation, he can return by 10 o'clock at night, if he wishes.

The cost will not be prohibitive, and so unless the train service is improved it is quite likely that Rusty Campbell's competition will take a small nick from the railroad company's profits.

The tri-cities—Moline, Rock Island and Davenport—have something new to offer the aviation world. The Central States Aero Corporation of Davenport has built the first of its lightplanes designed to accommodate one passenger and the pilot. It is an unusually neat job, a monoplane 50 hp. Riekenbacker engine with a speed of 100 m.p.h.

Campbell gave the plane its initial flight and was pleased, he said, with its climbing ability, stability, etc. This machine is not in quantity production, but the makers hope to begin marketing it as soon as possible.

Davenport, Iowa.

By Ralph W. Cram

Davenport expects to give flying folk a choice of two landing fields this Summer—the Davenport Airport on the northwestern edge of the city, doing a general commercial business, or for a social call on the Davenport Flying Club at its pri-

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	Per 25
1 inch Cartridges, red or green or white star	$ 5.00
1½ inch Cartridges, yellow or red or green star	7.50
1½ inch Cartridges, with change color star; red to white or green to red	8.00
1½ inch Cartridges, long; with parachute; change color star; white to green or white to red	16.25

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vate field on the Mississippi river lowlands above the city. The latter is the former Wallace Field which has been released and will be reopened.

The Central States Aero Company, with about the same personnel as the Flying Club, is building a lightplane around the Rickenbacker engine which it hopes to give test flights within a fortnight, and to put on the market later in the year. It is a chummy two-place monoplane, cabined, and designed to meet the demand for a moderate-priced light plane built around a thoroughly modern power plant.

Boston, Mass.

By Daniel Rochford

Colonial Air Transport, Inc., carried pay passengers over the night air mail run to Hadley Field for two weeks until the single-engine planes replaced the tri-engine transport on the line. Men, women, children, old and young made the trips and the company officials were delighted with the interest shown by the Boston public. The writer made the night flight twice during the period. Flying over New York City on a clear night with the full moon riding apparently on a level with the plane off toward the sea, the greatest vision of man's splendor ever to be beheld, greeted the air travelers. All of Manhattan, Brooklyn, the lights off on Long Island, and the towns and cities of New Jersey stretched out like a dozen heavens of stars. The Statue of Liberty and the Narrows, with the distant twinkling of the lighthouses off toward sea would make the trip an epic in any man's life.

Chief Pilot B. F. Billings of the Boston Airport Corporation flew back to Boston from Wichita, Kansas with a new model Travel Air three place open-cockpit plane recently.

A new type of air joy-riding is being developed for the Airport Corporation by Air Service of New England, Inc., which bids fair to revolutionize the ancient and honorable pastime of gypsying. Instead of advertising five or ten minute hops, the Air Service Corporation has prepared historic air tours. Attractive folders advertise the scenic and historic spots around Boston. Thus a man is offered the opportunity to take the ride of Paul Revere by airplane. Bunker Hill, the Constitution in its slip at the Navy Yard, the Old North Church, the schools and colleges and churches of Boston, the battlegrounds of Lexington and Concord, all can be seen at a much lower cost in time than if taken by the big automobile buses which normally have captured all of the visitor-business of Boston.

The initial reaction to this aerial "rubber neck" riding has justified its attempt. It is considered possible that Colonial Air Transport, Inc. might for a time keep its big tri-engine plane at Boston and lease it for noon-time sight-seeing tours by air. Boston Airport Corporation for whom the Air Service group are general sales agents would probably handle the operating.

After a visit to the Fairchild plant in New York City April 19, Patriots Day and a holiday in Massachusetts, President John Haughey of the Air Service Corporation declared that he would carry a parachute and drop off on the Fairchild building next time. It seems he had to walk up twenty flights of stairs due to a subway fire having paralyzed the power system in all buildings in the neighborhood. The Fairchild plant was burning candles and using flash-lights in its darker corners in order to see. One result of the trip was the ordering of a late type Fairchild camera for service at Boston. Local flying of obliques and mapping jobs for Fairchild in New England is thus a reality.

Among service cross-country trips of note was another Jenny hop by Captain C. W. Ford to Mitchel Field. A number of Boston pilots have made the Mitchel Field run lately but most of them prefer the DH or Douglas method of air locomotion.

Captain L. Ponton de Arce, Air Corps Reserve, better known as "Bon Bon" de Arce of Colonial was to talk before the Boston Chapter N.A.A. at a luncheon at the Hotel Westminster Wednesday April 27. De Arce's big contribution was not the explanation of how he landed a Fokker Universal in a swamp at night without hurting himself or his passen-

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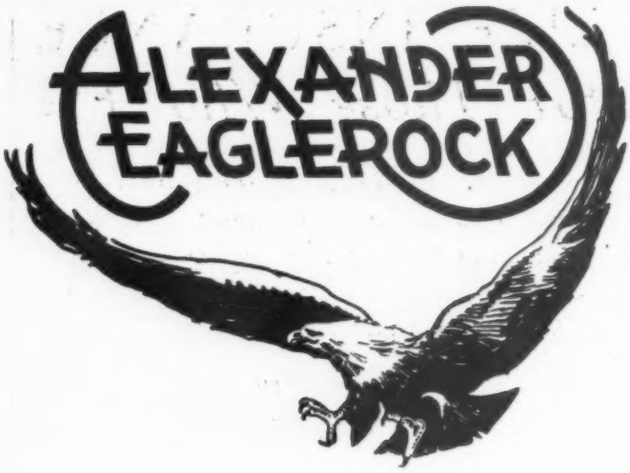

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gers, but rather his scheme for making night flying safe by having all factory chimneys made of rubber so they will bend when you fly into them. He nearly lost his composure when a heckler told him rubber smoke-stacks would be apt to rebound and slap one on the tail.

Capt. Gardiner H. Fiske, chairman of the Boston Municipal Air Board, is in Europe for a six weeks visit. In his absence he has appointed the writer as acting chairman. Major Charles H. Wooley and Arthur Richmond have been put in charge of the entertainment of the Italian pilot, Comdr. Francesco de Pinedo if he comes to Boston.

Service aircraft have been flying regularly. The Harvard Flying Club set its own record of eleven hours flying last week. Oakes Spalding set a record of five hours piloting on the club plane during one week.

The club has a group of thirty "heelers" or candidates for membership working one afternoon a week at the airport to earn election to the club.

UNITED STATES AIR FORCES

Military Attaches to See Maneuvers

The following foreign Military and Air Attachés have accepted the War Department's invitation to witness the joint Second Division Air Corps maneuvers at San Antonio, Tex., May 11 to 21: Major Angel M. Zuloaga, Argentina; Brig. Gen. A. Villa, Italy; Wing Comdr. Silvio Scaroni, Italy; Dr. Emil Wiehl, Germany; Comdr. G. T. Hetherington, Great Britain; Major W. H. S. Alston, Great Britain and Capt. S. Isoda, Japan. Due to the absence of Gen. G. A. L. Dumont, French Attaché, and Major Lombard, Assistant French Attaché, France will not be represented.

In addition to the above, it is understood that the Canadian Government will be represented by one officer, and that Argentina will send one other officer besides Major Zuloaga. The Military Attaché to Mexico has been authorized to invite two officers of the Mexican Army to attend.

To Photograph Flood Area

Lieut. Bob E. Nowland, Air Corps, of Bolling Field, left on the afternoon of April 18 en route to Bowman Field, Louisville, Ky., where he will be joined by Sergeant J. H. Crane, an Air Corps photographer. From Bowman Field Lieutenant Nowland and Sergeant Crane will proceed to Park Field, near Memphis, Tenn., reporting to the Army Engineer Officer at that point for work with the Mississippi River Commission. The mission of the two airmen will be to make photographs of the flooded area in that locality. The plane used is an amphibian.

Army Air Orders

The following officers, Air Corps, are placed on the detached officers' list, this to take effect upon their arrival at Fort Leavenworth, Kan.: Majors Oscar Westover, Robert E. M. Goolrick, Ira A. Rader, Lewis H. Brereton, Eugene A. Lohman, Follett Bradley, Ralph Royce, Capts. Robert C. Candee, Lynwood B. Jacobs and William E. Farthing.

Capt. Donald Lyle, Air Corps Res., Minneapolis, to active duty Chicago, Ill., reverting to inactive status May 1.

Capt. Lloyd N. Keesling, Air Corps, Fitzsimons Gen. Hosp., Denver, relieved from further assignment Mitchel Field and from observation and treatment at Fitzsimons Gen. Hosp., and is assigned to duty at March Field.

Navy Air Orders

Lieut. George F. Chapline to duty command VF Squad. 2, Aircf. Squad., Battle Fleet.

Lieut. Harry P. Krummes det. Nav. Air Sta., Pensacola, to 6th Reg. of Marines.

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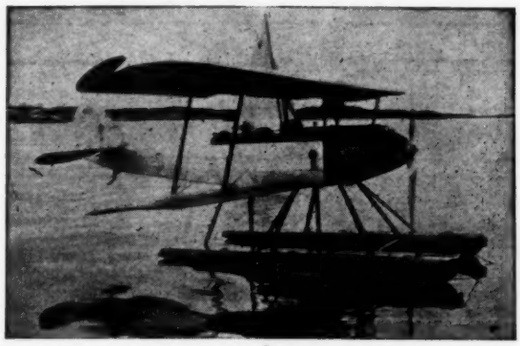

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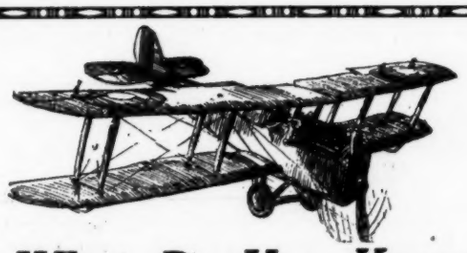

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